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Environmental Guidance

Resource Conservation and Recovery Act

Hazardous Waste Tank Systems

September 1997 (RCRA Subpart CC Update, March 2000)

U.S. Department of Energy
Office of Environmental Policy & Guidance
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Chapter 1
Hazardous Waste (HW) Accumulation, Storage, and Treatment Tank Regulatory Requirements

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1.1 Purpose

This document provides comprehensive guidance for complying with Federal hazardous waste (HW) tank regulations. These regulations are found in the Code of Federal Regulations (CFR), specifically in Subpart J (Tank Systems) (40 CFR 264.190 through 199 for permitted facilities, or 40 CFR 265.190 through 201 for interim status facilities). This guidance utilizes flowcharts and checklists to assist Department of Energy (DOE) staff and DOE operating contractor personnel in identifying the specific regulatory requirements necessary to complete various HW tank management or operation tasks, from tank installation through inspection and closure.

DOE staff should use this guidance as:

- An overview of the regulations for HW tank management;
- A comprehensive, step-by-step guide to the process of operating a HW tank, from installation to closure and for daily management pursuant to Resource Conservation, and Recovery Act (RCRA) requirements;
- A quick, readily available reference guide for specific topics concerning HW tank management.

This guidance is **not** to be consulted for requirements applicable to Underground Storage Tanks (USTs) regulated under Subtitle I of RCRA. Subtitle I regulates USTs that contain "Regulated Substances," which are hazardous substances in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or that contain petroleum. Guidance on the operation and maintenance of USTs is available in the DOE publication "Regulated Underground Storage Tanks." [1]

1.2 An Introduction to Solid and Hazardous Wastes

A solid waste is any material that is discarded by being abandoned (disposed, burned, or incinerated; or accumulated, stored, or treated prior to or in lieu of being disposed, burned, or incinerated); recycled, as specified in 40 CFR 261.2(c); or considered inherently waste-like as defined in 40 CFR 261.2(d). See the Glossary for the definition of "inherently waste-like." A solid waste is hazardous if it is not excluded from the hazardous waste regulations, and

- It is listed in one of the four lists developed by the Environmental Protection Agency (EPA) and contained in the CFR at 40 CFR 261.31-33 (a listed waste); or
- It exhibits one or more of four characteristics identified at 40 CFR 261.21-24--"ignitability," "corrosivity," "reactivity," and "toxicity," (a characteristic waste).

Also, mixtures of solid and hazardous wastes as well as residues from HW treatment may be HW (40 CFR 261.3). Below is a description of listed and characteristic wastes.

Listed Wastes

The first list of wastes contains the "F listed" wastes. These are generic wastes such as spent halogenated solvents used in degreasing operations, and dioxins commonly produced by manufacturing and industrial processes.

The second list of wastes contains the "K listed" wastes. Specifically identified industries such as petroleum refining and wood preserving produce "K listed" wastes.

The third list of wastes contains the "P and U listed" wastes. These wastes are specific commercial chemical products such as chloroform, creosote, acids, and pesticides.

(See 40 CFR 261.31 through 33 for the lists of "F, K, P, and U listed" wastes.)

Characteristic Wastes

A solid waste exhibits the characteristic of **ignitability** if a representative sample has any of the following properties:

- It is a liquid, other than an aqueous solution that contains less than 24 percent alcohol by volume, and has a flash point less than 60 degrees Centigrade (140 degrees Fahrenheit) as determined by the appropriate test (see 40 CFR 261.21 for more details);
- It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard;
- It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under 40 CFR 260.20 through 21; or
- It is an oxidizer as determined in 49 CFR 173.151.

A solid waste exhibits the characteristic of **corrosivity** if a representative sample of the waste has either of the following properties:

- It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method (see 40 CFR 261.22 for more details); or

- It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 millimeters (0.250 inch) per year at a test temperature of 130 degrees Fahrenheit as determined by the appropriate test method (see 40 CFR 261.22 for more details).

A solid waste exhibits the characteristic of **reactivity** if a representative sample of the waste has any of the following characteristics:

- It is normally unstable and readily undergoes violent change without detonating;
- It reacts violently with water;
- It forms potentially explosive mixtures with water;
- When mixed with water, it generates toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment;
- It is a cyanide- or sulfide-bearing waste that, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health and the environment;
- It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if it is heated under confinement;
- It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure; or
- It is a forbidden explosive as defined in 49 CFR 173.51, a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88.

A solid waste exhibits the characteristic of **toxicity** if, using the test methods described in Appendix II of 40 CFR Part 261 or equivalent method, the extract from a representative sample of the waste contains any of the contaminants listed in Table 1 of 40 CFR 261.24 at a concentration equal to or greater than the respective value given in that table (see 40 CFR 261.24 for more details). For further information refer to the DOE publication, "Definition of Solid and Hazardous Wastes." [2]

1.3 Managing Hazardous Waste Tanks at DOE Facilities

DOE facilities produce a great variety of hazardous wastes and radioactive mixed wastes (RMWs) which must be stored and treated properly in accordance with the regulations mandated by RCRA. The RCRA regulatory framework identifies those solid wastes that must be managed as HWs.

HW streams at DOE facilities can be quite large in volume. DOE hazardous waste streams result primarily from laboratory research, cleaning and maintenance activities, chemical and fuel processing operations, and remedial and restoration operations. In some processes, HWs at DOE facilities can become mixed with radioactive waste. When this occurs, the RMW must be managed under RCRA to the extent that such management is not inconsistent with the provisions of the Atomic Energy Act (AEA). RMW is regulated by both the applicable provisions of RCRA and the AEA. In cases where the two authorities conflict, the AEA requirements would take precedence over the RCRA requirements.

Requirements applicable to management of radioactive wastes are also contained in the following DOE Orders:

- DOE Order 5400.5, Radiation Protection of the Public and the Environment; and
- DOE Order 5820.2A, Radioactive Waste Management.

1.4 Statutory and Regulatory Authority for Federal Facility Compliance with HW Tank Regulations

Pursuant to RCRA Section 6001, Federal facilities are subject to, and must comply with, all "Federal, State, interstate, and local requirements, both substantive and procedural (including any requirements for permits or reporting), respecting control and abatement of solid or hazardous waste disposal in the same manner, and to the same extent, as any person is subject to" such requirements.

1.5 RCRA Authorized States

An authorized state is one that has been granted authority by EPA to implement the Federal RCRA program in lieu of EPA implementation of the program. In an unauthorized state, the Federal RCRA program is run by EPA, not by the state.

1.6 HSWA and Pre-HSWA (RCRA) Authorities

In January of 1981, the EPA promulgated permitting standards under RCRA for HW accumulation, storage, and treatment tanks. On July 14, 1986, EPA revised these regulations. Certain portions of the July 14, 1986, rule were promulgated pursuant to RCRA authority, while other portions were promulgated pursuant to authorities added to RCRA by the Hazardous and Solid Waste Amendments of 1984 (HSWA). Below is a brief description of the differences between pre-HSWA and HSWA requirements for HW tank systems.

Pre-HSWA (RCRA) Requirements

The sections of the tank rule that were promulgated pursuant to RCRA authorities are the following:

- **All** sections of the July 14, 1986, tank rule [51 *Federal Register* (*FR*) 25472] when applied to **existing** aboveground, on-ground, and in-ground tank systems, and to underground tank systems that **can** be entered for inspection.

HSWA Requirements

The sections of the tank rule that were promulgated pursuant to HSWA authorities are the following:

- Interim status requirements applicable to tank systems owned and operated by small quantity generators (Section 3001(d));
- Leak detection requirements for **all** new underground tank systems (Section 3004(o)(4)); and
- Technical and permitting standards for underground tanks that **cannot** be entered for inspection (Section 3004(w)).

The provisions were effective immediately in all states, regardless of the authorization status. Tanks owned by DOE in these categories must comply with the Federal regulations **and** with any applicable state requirements.

1.7 Additional Requirements: State Regulations, Regulatory Changes, DOE Orders, Federal Facility Agreements

This guidance has been designed to be used in conjunction with, not in lieu of, Federal Facility Compliance Agreements, Federal and state HW tank regulations, and DOE Orders.

Federal Facility Compliance Agreements (FFCAs)

DOE staff should review any consent agreement made between DOE, states, and EPA that may affect the operation of a HW tank management program.

State Regulations

States that have authority over their RCRA programs **may** have requirements that are more stringent than those in unauthorized states. DOE facilities need to closely monitor state RCRA programs for changes that will affect their facilities.

DOE Orders

DOE Orders pertinent to the management of HW tanks (e.g., notification and reporting requirements for releases of HW from a tank) include:

- DOE Order 151.1, Comprehensive Emergency Management System;
- DOE Order 231.1, Environmental, Safety, and Health Reporting;
- DOE Order 232.1, Occurrence Reporting and Processing of Information;
- DOE Orders 5500.1B, 2B, 3A, and 10, which implement DOE's Emergency Management System and DOE's Emergency Readiness Assurance Program;
- DOE Order 5400.1, General Environmental Protection Program; and
- DOE Order 5484.1, Environmental Protection, Safety, and Health Protection Information Report Requirements.

Also, careful records of HW tank monitoring activities need to be kept for inclusion in the Annual Site Environmental Report required by DOE Order 5400.1. Monitoring and sampling information also is required for inclusion in the Environmental Monitoring Report (EMR). If the site is exempted from the EMR, the information will be included in the Environmental Summary required by DOE Order 5484.1.

1.8 How to Use This Guidance

This guidance is organized according to the kinds of HW tanks that may exist at DOE facilities. The user should read Chapter 2, "Identification and Classification of Hazardous Waste Tanks," before attempting to begin any of the activities in this document. After reading Chapter 2, the reader should understand both the nature of the tank systems currently located or planned for his/her facility and the contents (or intended contents) of those tanks.

Once a HW tank has been identified and classified, the reader should use Module C in Chapter 2, "Module C: Next Steps," to identify the appropriate HW tank requirements and their location in this guidance. Following are the requirements for existing or new tanks and for small quantity generators.

For **existing hazardous waste tanks**:

- Tank Integrity Testing;
- Operating and Inspection Requirements;
- Secondary Containment Requirements, Secondary Containment: Variance Requirements (if a variance is warranted), and Requirements for Responding to a Leak from a HW Tank that has Received a Variance;
- Response to Leaks or Spills (includes repairs and reporting); and
- Closure and Post-Closure Care.

For **new hazardous waste tanks**:

- New Tank Construction and Installation Requirements;
- Operating and Inspection Requirements;
- Secondary Containment Requirements, and Secondary Containment: Variance Requirements (if a variance is desired);
- Response to Leaks or Spills (includes repairs and reporting); and
- Closure and Post-Closure Care.

(See Chapter 2, "Module B: Classification of Hazardous Waste Tanks by Age," for the definitions of "existing" and "new" HW tanks.)

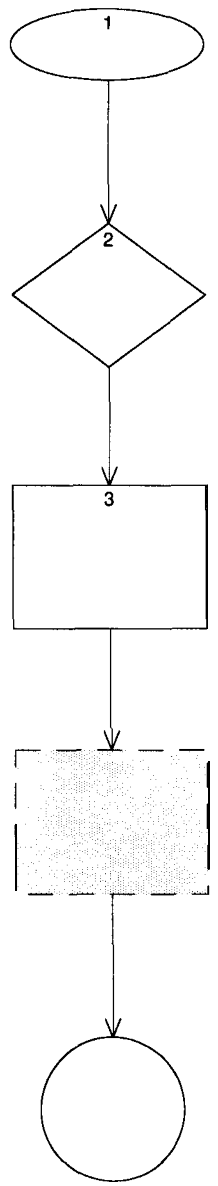
For **small quantity generators** or generators who accumulate HW on-site in tanks for less than 90 days:

- Accumulation Time and Small Quantity Generator Requirements.

Each **chapter** contains a table of contents, an introduction to the chapter, and modules. Each **module within each chapter** contains an introduction, milestones that highlight the most important specific actions within that module, a step-by-step flowchart, and supplemental information that supports the flowchart. Reference citations are provided in brackets, where appropriate. Figure 1.1 identifies the shapes that have been used in the flowcharts. A glossary has been provided in Appendix A. Summary milestones for each chapter are provided in Appendix B. A reference list has been provided in Appendix C.

The CFR was the primary reference source for both the flowcharts and the supplemental information to the flowcharts. Where possible, the CFR language was used directly. A list of all referenced CFR citations can be found in Appendix D. Additional information was obtained from the *Federal Register* and technical documents published by the EPA.

Figure 1.1 : Guide to Shapes Used in This Manual



The oval is used to begin each flowchart.

Shaded diamonds are used to ask a question.

Plain boxes are used to present answers to questions found in diamonds or to tell the reader about a section of the regulations.

Shaded dashed boxes give the reader directions that are needed to successfully complete each module.

Round circles direct the reader to turn the page to continue a flowchart.

This guidance covers the regulations for both permitted [40 CFR Part 264] and interim status [40 CFR Part 265] facilities. (A facility has interim status if, as defined by RCRA Section 3005(e), (1) the facility required to have a permit was in existence on November 19, 1980, or (2) the facility was in existence on the effective date of statutory or regulatory changes under RCRA that render the facility subject to the requirement to have a permit under Section 3005 and the facility has complied with the requirements of Section 3010(a) and has made an application for a permit. The facility will be treated as having a permit until a final administrative decision is made.) In most cases the requirements for permitted and interim status facilities are the same.

To keep the document as concise as possible, when requirements are the same for permitted and interim status facilities the reference citation appears as a combination of both CFR citations. For example, the reference citation for Section (c) from the General Operating Requirements is presented as 40 CFR 264/265.194(c).

1.9 Overview of Chapters

Chapter 2: Identification and Classification of Hazardous Waste Tanks
This chapter identifies tanks that are subject to Federal regulation, categorizes HW tanks according to age, and describes HW tanks that are exempt from the HW tank requirements. [40 CFR 260.10, 262.34, and 264/265.1]

Chapter 3: Integrity Testing for Existing Tanks
This chapter provides the requirements for assessing existing tanks that do not have secondary containment. This assessment must prove that the tank is capable of holding HW without leaking. [40 CFR 264/265.191]

Chapter 4: **New Tank Construction and Installation Requirements**
Owners or operators of new tank systems are required to prove that their system has been adequately designed and safely installed. The structural integrity of the tank must be maintained in order to prevent HW leaks. [40 CFR 264/265.192]

Chapter 5: **Organic Air Emission Control Requirements for HW Tanks**
With some DOE-relevant exceptions, owners or operators of HW tank systems are required to comply with air emission controls based on the average VO concentration of the HW: (1) at the point of waste origination, or (2) at the point of waste treatment. HW tanks standards are separated into two levels -- Tank Level 1 and Tank Level 2.
[40 CFR Part 264/265, Subpart CC]

Chapter 6: Operating and Inspection Requirements
HW tanks must have sufficient spill and overfill prevention controls and adequate freeboard must be maintained in uncovered tanks to prevent overtopping by wave or wind action. Inspection of certain elements of a HW tank system is required to prevent or quickly identify releases. [40 CFR 264/265.194 and 195]

Chapter 7: Secondary Containment Requirements
Secondary containment structures must be installed on new and existing HW tanks. Timetables for the two age categories vary. It is possible to obtain a variance from this requirement. Consult this chapter before installing secondary containment structures. [40 CFR 264/265.193]

Chapter 8: Release Response Requirements
In the event of a release from a HW tank, owners or operators must cease operation of that tank and perform any necessary cleanup, repair, and reporting actions. [40 CFR 264/265.196]

Chapter 9: Accumulation Time and Small Quantity Generator Requirements
Generators of HW who meet the definition of a small quantity generator and/or who accumulate HW on-site for less than 90 days are responsible for the HW tank requirements contained in this chapter. [40 CFR 262.34, 261.5, and 265.201]

Chapter 10: Closure and Post-Closure Care Requirements
Upon closure of a HW tank system, the owner or operator must remove or decontaminate the system and manage all associated materials as HW. [40 CFR 264/265.197]

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Chapter 2
Identification and Classification of Hazardous Waste Tanks

Contents

2.1 Introduction

2.1.1 Background

The Federal HW accumulation, storage, or treatment tank regulations specify requirements for HW tanks that are located aboveground, underground, or partially underground. The Federal HW tank regulations also allow for exemptions from all or part of the regulations. Exemptions are based upon the contents of the tanks (i.e., certain recyclable HWs) or the use of a tank during the immediate response to a discharge. Exemptions are also available for wastewater treatment units, elementary neutralization units, and totally enclosed treatment units. Generators who are accumulating HW on-site for 90 days or less, or who are small quantity generators, are also exempted from some of the Federal HW tank system requirements.

This guidance should be used when:

- Installing a new HW tank;
- Determining the current level of compliance at HW tank facilities;
- Operating, maintaining, or closing any HW tank; and/or
- Replacing or upgrading an existing HW tank.

This chapter allows users to identify Federally regulated HW tanks and to determine the age classification and any applicable exemptions for tanks at a DOE facility.

2.1.2 Major Requirements

This chapter has been organized into three modules. Each module addresses specific classification procedures for HW tanks.

- **Module A: Identification of Federally Regulated Hazardous Waste Tanks.** This module aids the reader in the identification of Federally regulated HW tanks as well as those HW tanks that are exempted from certain requirements.
- **Module B: Classification of Hazardous Waste Tanks by Age**. This module further classifies HW tanks into two categories based on age: "new" or "existing."
- **Module C: Next Steps.** This module guides the reader to the chapters and modules of this document that will pertain to a particular type of HW tank.

2.2 Module A: Identification of Federally Regulated Hazardous Waste Tanks

2.2.1 Introduction

To comply with the Federal requirements for the accumulation, storage, and treatment of HW in tanks, all tanks that contain HW must be identified. As EPA designates more waste streams as HW, tanks previously classified as containing non-HWs may be re-classified as tanks containing HW.

Identification of EPA-regulated HW tanks involves the presence of wastes defined as "hazardous." The accurate characterization of some hazardous wastes can be complicated by the presence of radioactive wastes.

DOE personnel must have a thorough understanding of this chapter to ensure that all regulated (and exempted) HW tanks are identified.

2.2.2 Milestones

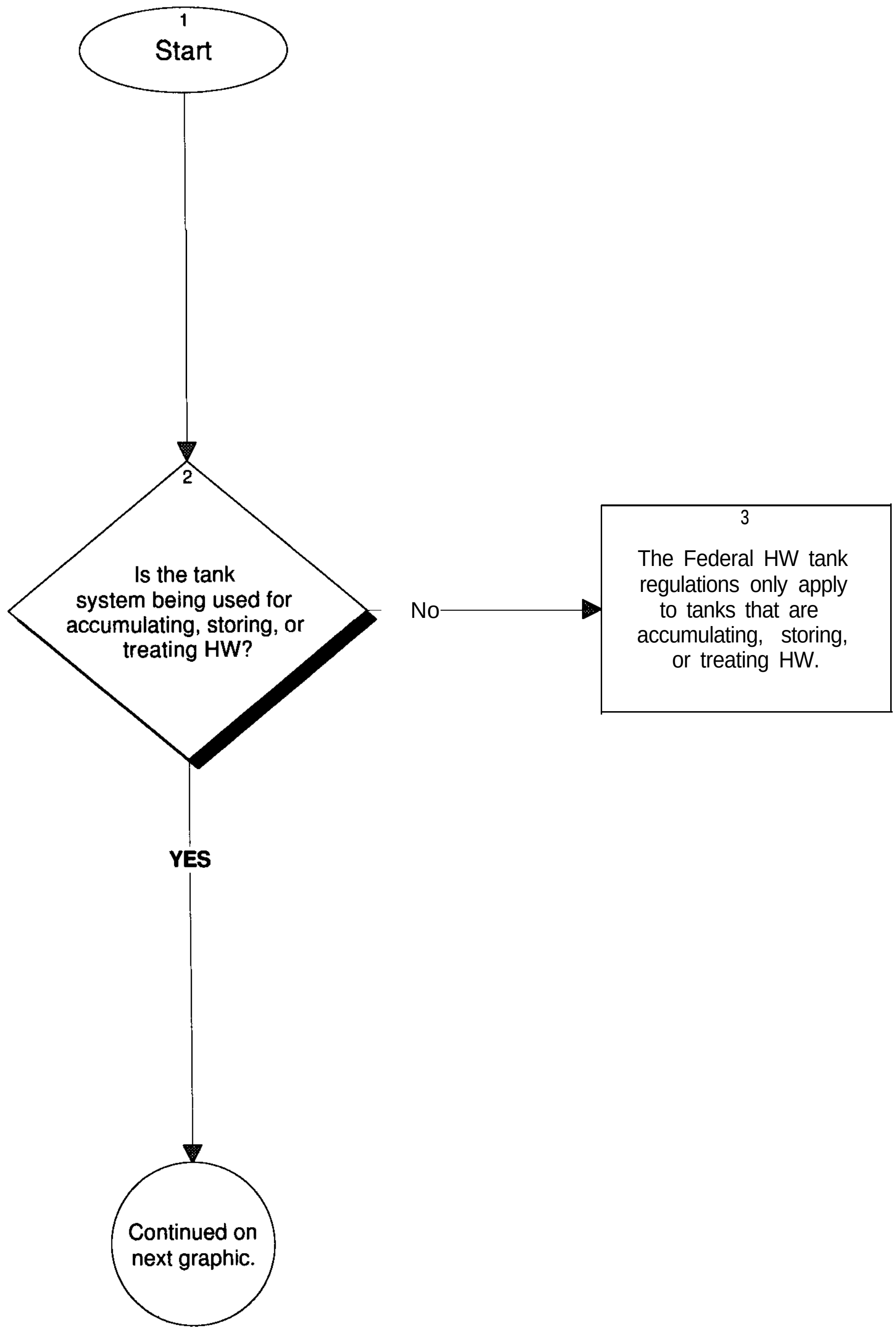
Have all Federally regulated hazardous waste tanks been identified?

To determine how HW tanks at your facility are regulated:

- All HWs in tanks must be identified;
- All exempted HW tanks must be identified; and

The following flowchart outlines EPA's HW tank classification elements.

Figure 2.1: Identification of Federally Regulated Hazardous Waste Tanks



Step 1 Start

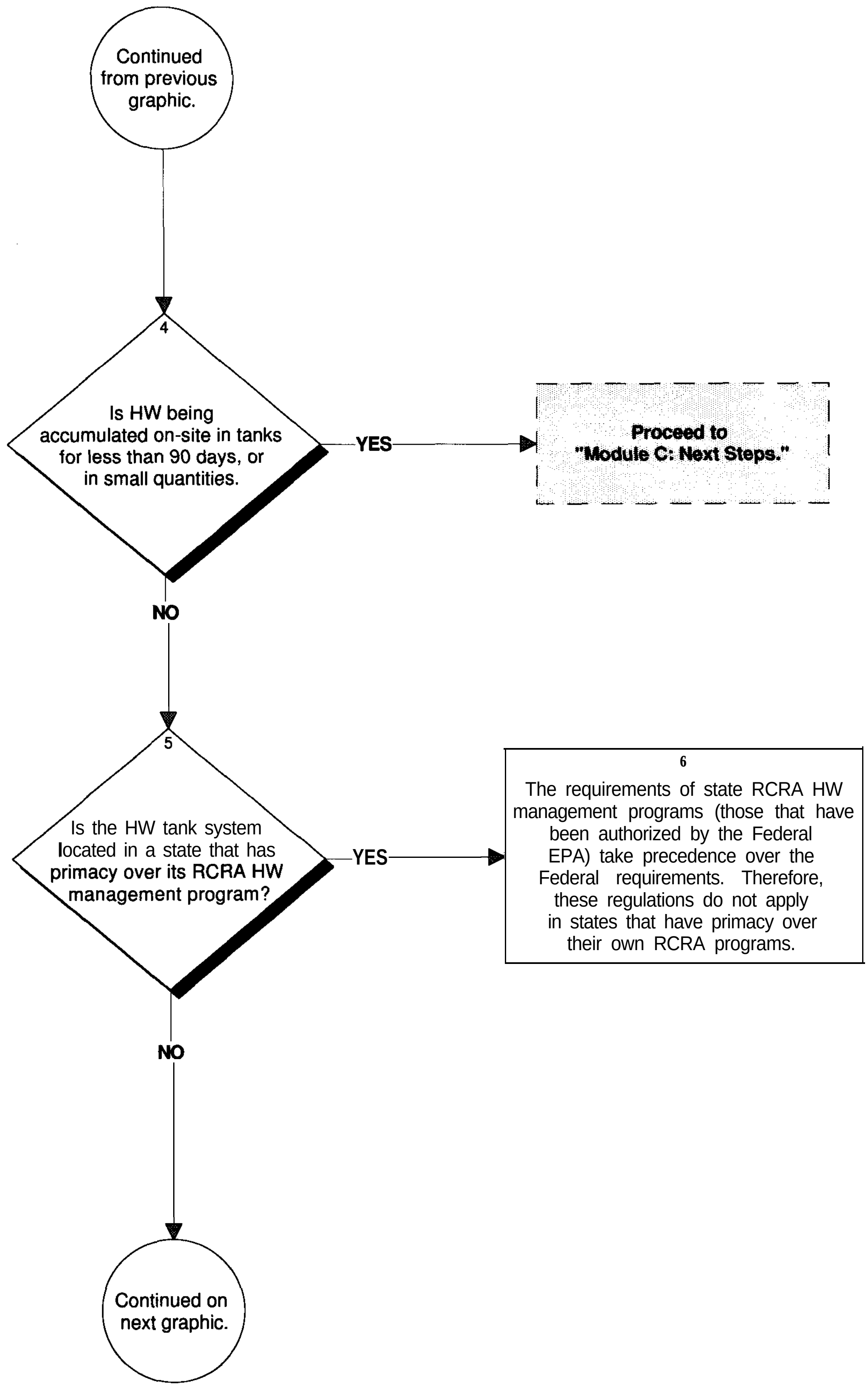
Step 2 Tank systems may only be used for the storage and treatment of HW; they **may not** be used for the disposal of HW.

"Storage" means the holding of HW for a temporary period at the end of which the HW is treated, disposed, or stored elsewhere.

"Treatment" means any method, technique, or process (including neutralization), designed to change the physical, chemical, or biological character or composition of any HW so as to:

- Neutralize such waste;
- Recover energy or material resources from the HW;
- Render such HW non-hazardous or less hazardous; safer to transport, store, or dispose; or amenable for recovery or storage; or
- Reduce the HW in volume.

Step 3 These regulations do not apply to tanks holding any substance other than a HW.

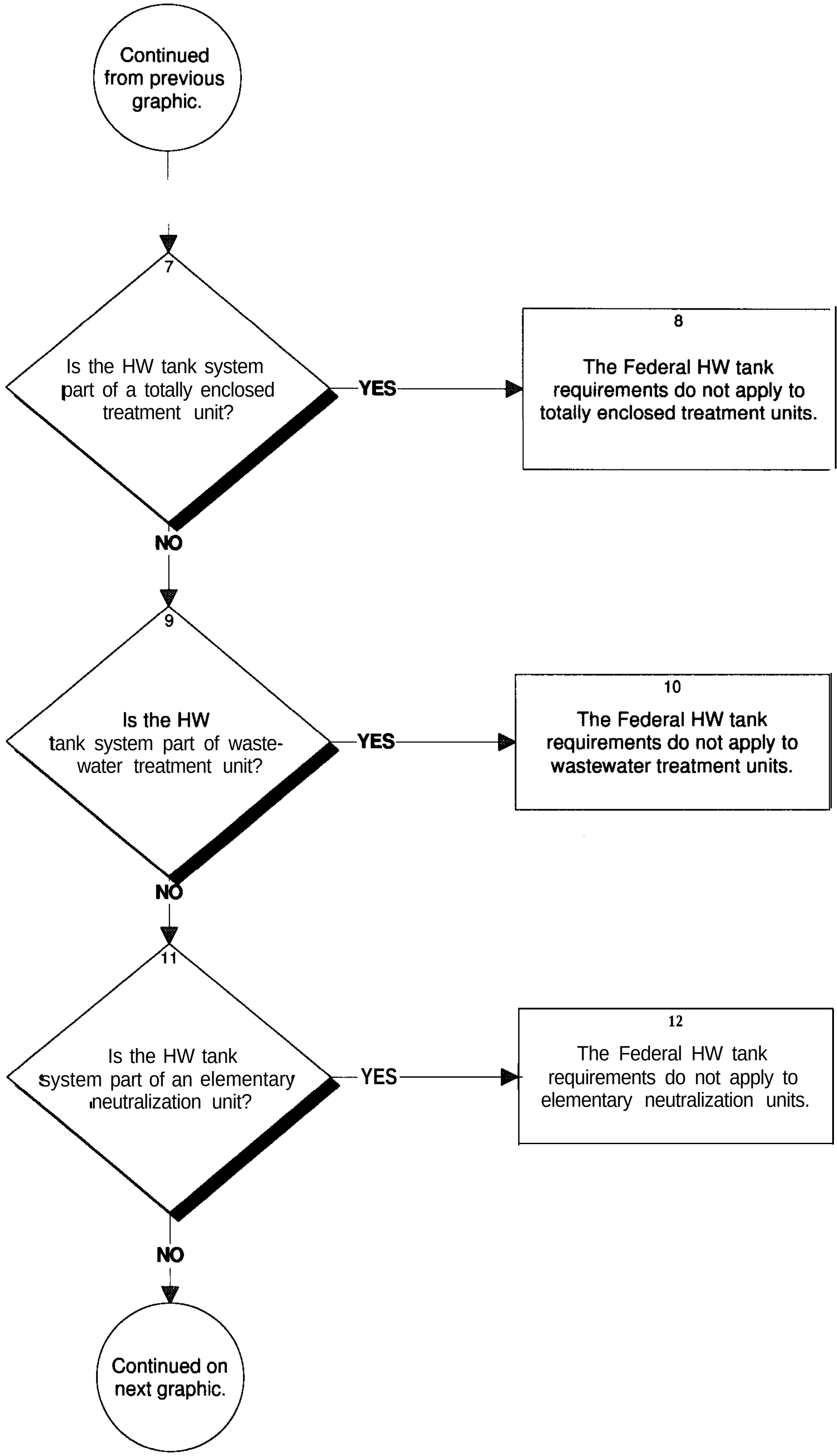

Continued from previous graphic.
4
Is HW being accumulated on-site in tanks for less than 90 days, or in small quantities.
YES
Proceed to "Module C: Next Steps."
NO
5
Is the HW tank system located in a state that has primacy over its RCRA HW management program?
YES
6
The requirements of state RCRA HW management programs (those that have been authorized by the Federal EPA) take precedence over the Federal requirements. Therefore, these regulations do not apply in states that have primacy over their own RCRA programs.
NO
Continued on next graphic.

Step 4 Neither a permit nor interim status are required for generators who accumulate HW in any quantity for 90 days or less, and/or who generate between 100 and 1,000 kilograms of HW a month, storing it for 180 days or less.

Step 5 A state is said to have primacy when EPA gives the state the authority to administer a given regulatory program in lieu of Federal regulation.

Step 6 The Federal HW tank requirements **do not** apply to an owner/operator who treats, stores, or disposes of HW in a state with an authorized RCRA HW program unless treatment, storage, or disposal of HW occurs at a facility that **was not** covered by the applicable regulations when the state obtained authorization, and for which EPA promulgates regulations **after** the state is authorized. Federal regulations will apply until the state is authorized to regulate such facilities under Subpart A of 40 CFR Part 271. State regulations must be at least as stringent as the Federal regulations described in this manual in order for the state to be authorized. If the tank is located in an authorized state, the owner/operator must be aware of the state regulations.

Figure 2.1: Identification of Federally Regulated Hazardous Waste Tanks - continued



Step 7 A "totally enclosed treatment unit" is defined by 40 CFR 260.10 as a "facility for the treatment of HW which is directly connected to an industrial production process and which is constructed and operated in a manner which prevents the release of HW or any constituent thereof into the environment during treatment." An example of this would be a pipe in which waste acid is neutralized.

Step 8 Because of the high degree of environmental protection provided by these units, EPA exempted them from these regulations.

Step 9 A "wastewater treatment unit" is a device that:

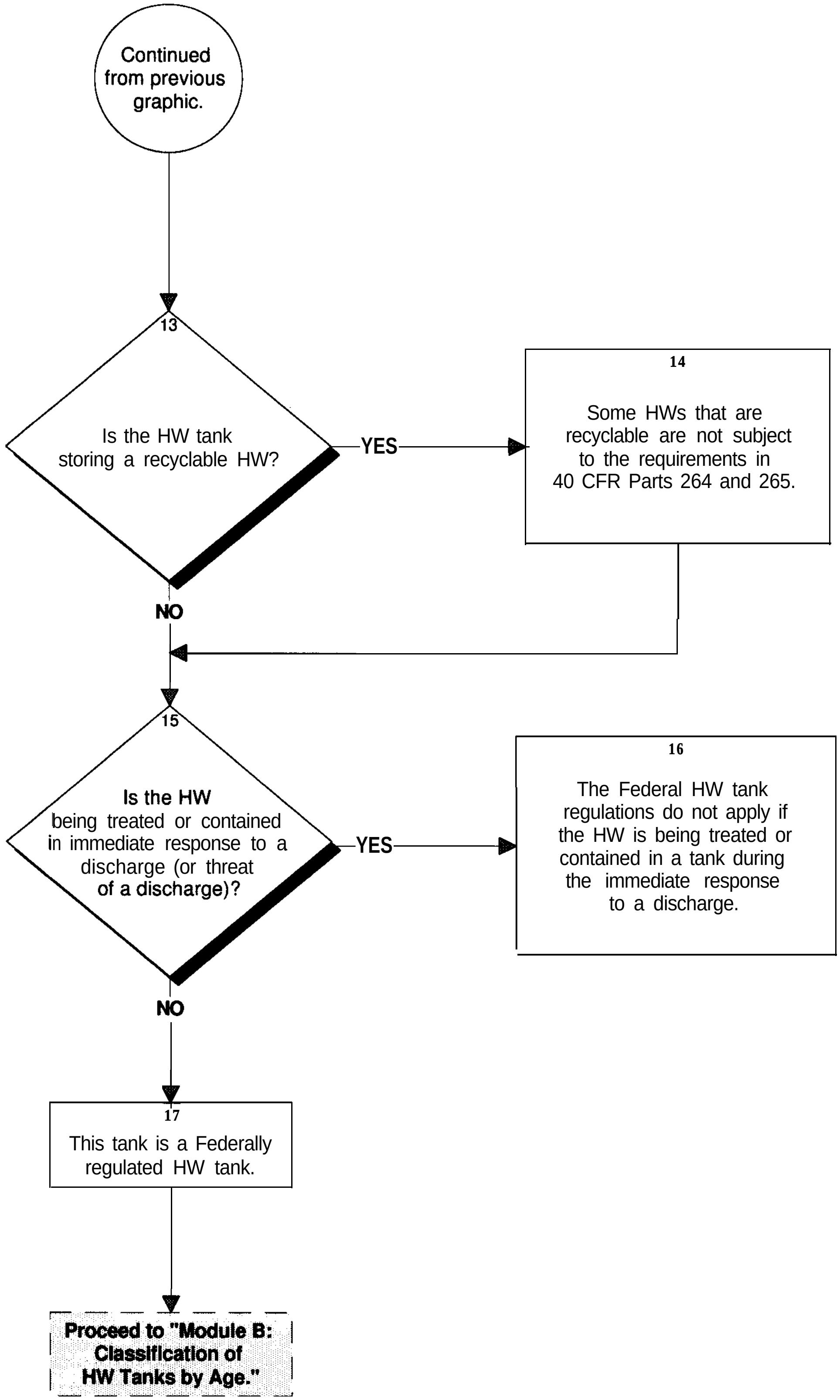
- Is part of a wastewater treatment facility that is subject to regulation under either Section 402 or 307(b) of the Clean Water Act; and
- Receives and treats or stores an influent wastewater that is a HW, or generates and accumulates, stores, or treats a wastewater treatment sludge that is a HW; and
- Meets the definition of tank or tank system. A "tank" is a stationary device designed to contain an accumulation of HW and that is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support. A "tank system" is a HW storage or treatment tank and its associated ancillary equipment and containment system. [3]

Step 10 Wastewater treatment units are exempted from these regulations by 40 CFR 264(g)(6) or 265(c)(10).

Step 11 An "elementary neutralization unit" is a device that:

- Is used for neutralizing wastes that are hazardous only because they exhibit the corrosivity characteristic defined in 40 CFR 261.22 or are listed in 40 CFR Part 261, Subpart D because they exhibit this characteristic; and
- Meets the definition of tank, tank system, container, transport vehicle, or vessel. (See Step 9 for the tank and tank system definitions.) A "container" is any portable device in which a material is stored, transported, treated, disposed, or otherwise handled. A "transport vehicle" is a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle.

Step 12 Elementary neutralization units have been exempted from compliance with the HW tank regulations.


Continued from previous graphic.
13
Is the HW tank storing a recyclable HW?
YES
14
Some HWs that are recyclable are not subject to the requirements in 40 CFR Parts 264 and 265.
NO
15
Is the HW being treated or contained in immediate response to a discharge (or threat of a discharge)?
YES
16
The Federal HW tank regulations do not apply if the HW is being treated or contained in a tank during the immediate response to a discharge.
NO
17
This tank is a Federally regulated HW tank.
Proceed to "Module B: Classification of HW Tanks by Age."

Step 13 A material is recycled if it is used, reused, or reclaimed, as those terms are defined in 40 CFR 261.2 and in the glossary of this manual.

Step 14 The following recyclable materials **are not** subject to the requirements of 40 CFR Parts 264/265 Subpart J. These materials, identified in 40 CFR 261.6(a)(3), include:

- Industrial ethyl alcohol being reclaimed, except in cases where it is being exported for reclamation, in which case the export requirements of 40 CFR 262.53, 262.56, and 262.57 apply; and
- Other materials associated with the petroleum refining industry.

The following recyclable materials **are not** subject to the requirements of 40 CFR Part 261 but **are** regulated under Subparts C through G of 40 CFR Part 266 and all applicable permitting provisions in 40 CFR Parts 270 and 124:

- Recyclable materials used in a manner constituting disposal;
- HWs burned for energy recovery in boilers and industrial furnaces that are not regulated under Subpart O of 40 CFR Parts 264 or 265;
- Recyclable materials from which precious metals are reclaimed; and
- Spent lead-acid batteries that are being reclaimed.

Recycled used oil that is hazardous solely because it exhibits one or more of the characteristics described in Chapter 1 is regulated under 40 CFR Part 279 (Standards for the Management of Used Oil).

40 CFR 261.2(f) requires owners or operators who are respondents in enforcement actions and claim that certain materials are not solid wastes or are conditionally exempt from regulation to provide documentation demonstrating the claim.

Step 15 Discharges covered under this provision include those that involve materials that are not considered to be HW until such time as they are discharged (i.e., products).

Step 16 If the discharged HW is treated or contained in a tank **after** the immediate response period is over, however, it is regulated as HW.

Step 17 This tank is subject to all applicable Subpart J requirements.

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2.3 Module B: Classification of Hazardous Waste Tanks by Age

2.3.1 Introduction

After identifying Federally regulated HW tanks, the next step is to classify the tanks by age. It is important to know the age of HW tanks at a facility. Some tanks that were in existence and in use prior to July 14, 1986, can be classified as new tanks if they have been removed from service and subsequently reinstalled as replacement tanks for existing systems. The requirements for secondary containment are different for new tanks than for existing tanks.

2.3.2 Milestones

Have all of the hazardous waste tanks been categorized according to age?

Tanks that meet the following criterion are categorized as "new" tanks:

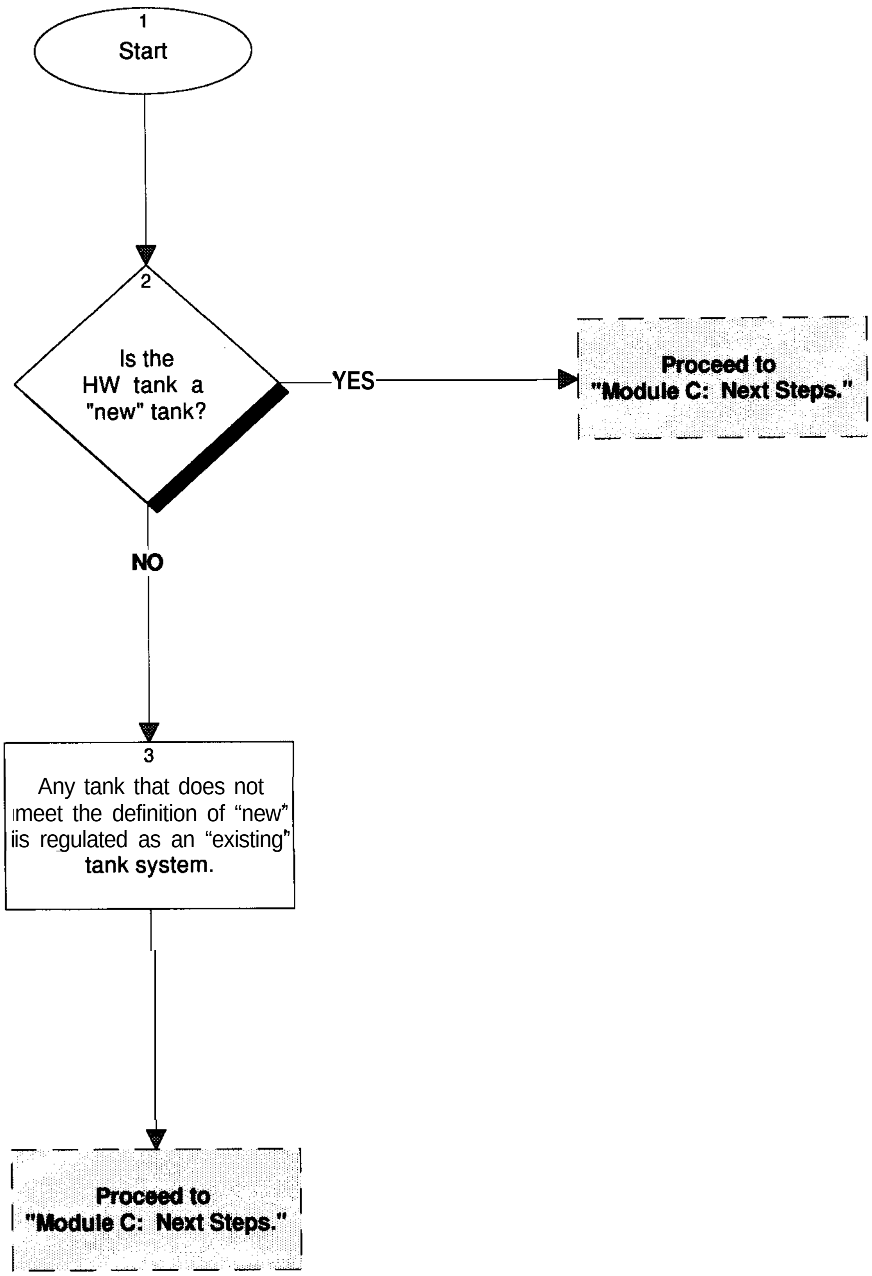
- Installation of the HW tank commenced after July 14, 1986.

Tanks that meet the following criterion are categorized as "existing" tanks:

- Installation of the HW tank commenced on or before July 14, 1986.

The following flowchart outlines EPA's age categorization requirements for HW tanks.

Figure 2.2: Classification of Hazardous Waste Tanks by Age



Step 1 Start

Step 2 "New tank system" or "new tank component" means a tank system or component that will be used for the storage or treatment of HW and for which installation commenced after July 14, 1986.

"New tank system" means not only newly manufactured tank systems that will be put into service for the first time, but also "existing" tanks (defined in Step 3) that have been reinstalled and used as replacement tank systems.

Step 3 "Existing tank system" or "existing component" means a tank system or component that is used for the storage or treatment of HW and that is in operation or for which installation commenced on or prior to July 14, 1986.

Note: For the purpose of Steps 2 and 3, installation will be considered to have commenced if the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system **and**, if either:

- A continuous, on-site, physical construction or installation program has begun; or
- The owner or operator has entered into contractual obligations that cannot be canceled or modified without substantial loss, or without preventing the completion of the installation of the tank system within a reasonable amount of time.

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2.4 Module C: Next Steps

2.4.1 Introduction

The following flowchart is different from the other flowcharts in this document in that it acts as a map to other chapters of this guidance. This flowchart should be used to identify regulatory requirements associated with specific actions (e.g., installing a new HW tank, reporting releases, recordkeeping).

Once you have determined that the tank is Federally regulated, the decision diamonds on the left side of the flowchart can be used to find the appropriate row for the identified HW tank. The row of dashed line rectangles can then be followed to the rectangle containing the action that needs to be completed. The rectangle identifies the chapter that addresses the action. Proceed to that chapter for guidance.

Figure 2.3: Next Steps

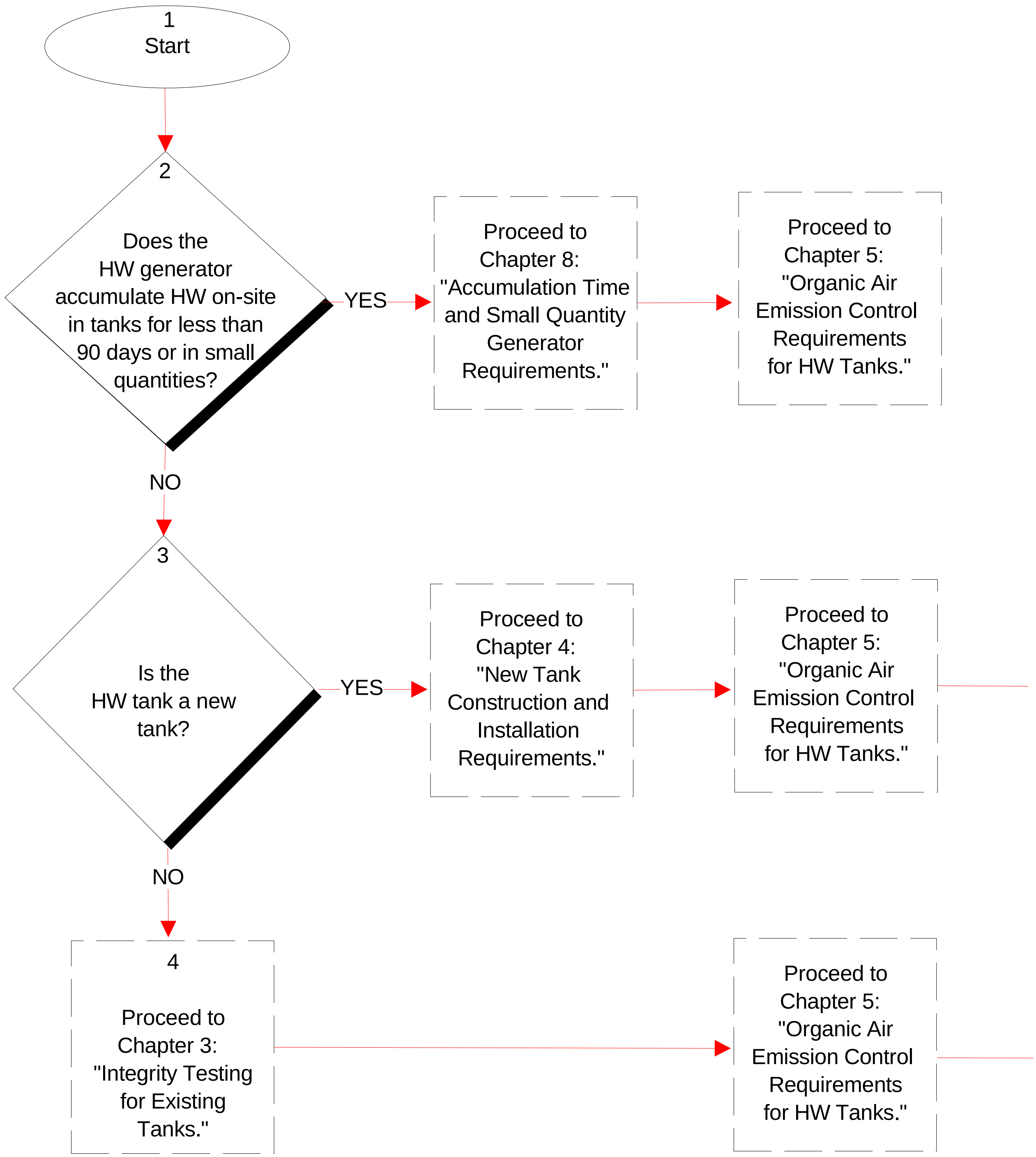
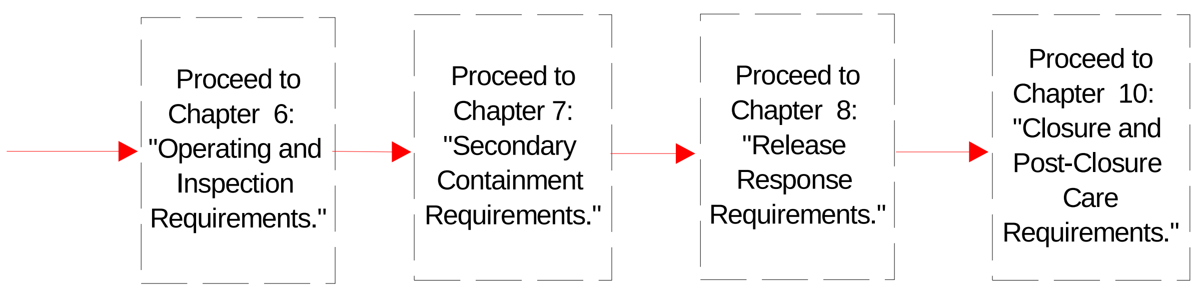
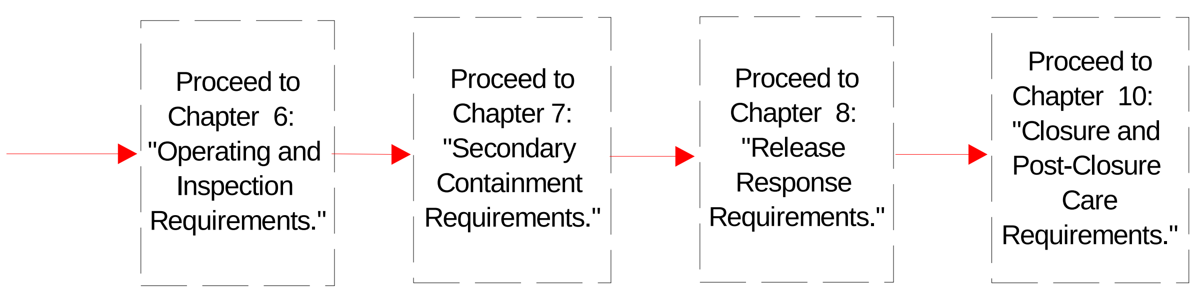


Figure 2.3: Next Steps - continued





Step 1 Start

Step 2 **Chapter 8: Accumulation Time and Small Quantity Generator Requirements**
Generators who accumulate HW on-site for 90 days or less must comply with the requirements presented in "Module A: Accumulation Time Requirements." Small quantity generators who accumulate HW on-site must comply with the requirements of "Module B: Small Quantity Generator Requirements." [40 CFR 261.5, 262.34, and 265.201]

Step 3 **Chapter 4: New Tank Construction and Installation Requirements**
Owners or operators of new tank systems are required to prove that their system has been adequately designed and safely installed. The structural integrity of the tank must be maintained in order to prevent HW leaks. [40 CFR 264/265.192] See the grey box on page 33 for a description of the remaining chapters that are applicable to new HW tanks.

Step 4 **Chapter 3: Integrity Testing for Existing Tanks**
This chapter provides the requirements for the assessment of existing tanks that do not have secondary containment. This assessment determines whether the tank is capable of holding HW without leaking. [40 CFR 264/265.191]

Note: With the exception of Chapter 3, which applies only to **existing** tanks, and Chapter 4, which pertains only to **new** tanks, all of the following chapters (and modules) apply to new and existing tanks. In the case of secondary containment, the **schedule** of compliance varies for new and existing tanks, but the actual requirements of Chapter 6, "Module A: Secondary Containment Requirements," are the same.

See the grey box on page 33 for a description of the remaining chapters that are applicable to existing HW tanks.

Chapter 5: **Organic Air Emission Control Requirements for HW Tanks**
With some DOE-relevant exceptions, large quantity generators and owners or operators of treatment, storage, and disposal facilities with HW tank systems are required to comply with air emission controls based on the average VO concentration of the HW: (1) at the point of waste origination, or (2) at the point of waste treatment. HW tanks standards are separated into two levels -- Tank Level 1 and Tank Level 2. [40 CFR Part 264/265, Subpart CC]

Chapter 6: Operating and Inspection Requirements
HW tanks (new and existing) must have sufficient spill and overfill prevention controls, and they must maintain adequate freeboard in uncovered tanks to prevent overtopping by wave or wind action. These requirements are presented in "Module A: Operating Requirements." [40 CFR 264/265.194] In addition to the operating requirements, Module B of this chapter provides inspection requirements. Daily inspection of certain elements of a HW tank system is required to quickly identify/prevent releases. [40 CFR 264/265.195]

Chapter 7: Secondary Containment Requirements
"Module A: Secondary Containment Requirements" describes the requirements for the installation of secondary containment for either existing or new tanks. It is possible to obtain a variance from the secondary containment requirements (see "Module B: Secondary Containment: Variance Requirements"). After a release of HW occurs from a tank that has received a variance, the response must be tailored to the variance type and to the extent of the spill. Consult "Module C: Responding to Releases from HW Tanks that have Received a Variance." [40 CFR 264/265.193]

Chapter 8: Release Response Requirements
In the event of a release from a HW tank, owners or operators must cease operation at that tank and perform any cleanup and repair required (see "Module A: Response to Leaks or Spills"), and must conduct reporting (See "Module B: "Release Reporting") as necessary. [40 CFR 264/265.196]

Chapter 10: Closure and Post-Closure Care Requirements
Upon closure of a HW tank system, the owner or operator must remove or decontaminate the system and manage all associated materials as HW as described in Module A. Furthermore, if all HW-contaminated soils, structures, etc. cannot be removed or decontaminated, the tank system must be closed in the same (more stringent) manner as HW landfills (see Module B). [40 CFR 264/265.197]

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Chapter 3
Integrity Testing for Existing Tanks

Contents

3.1 Introduction

3.1.1 Background

The July 14, 1986, final rule, which revised the standards for the management of HW tanks, required the installation of secondary containment structures on new HW tanks prior to their being placed into service. Owners and operators of HW tanks that were in existence on or before July 14, 1986, however, did not have to immediately install secondary containment structures on those tanks. (See Chapter 6, "Secondary Containment Requirements," to determine the date by which existing tanks must have secondary containment installed.) Instead, owners and operators were required to conduct an integrity assessment of existing HW tanks to prove that those HW tanks were not leaking or were not otherwise unfit for use. The Federal regulations required that those assessments were to have been completed by January 1988.

EPA periodically re-examines and re-defines the realm of HW. Wastes that are not currently regulated as HW may be regulated as such in the future. When wastes are re-defined as hazardous, the tank containing the "new" HW must receive an integrity assessment within 12 months if secondary containment structures have not yet been added to that tank.

3.1.2 Major Requirements

All of the integrity assessment requirements are addressed in Module A.

- **Module A: Integrity Testing for Existing HW Tanks.** This module describes elements of an integrity assessment addressing design standards, corrosion protection measures, and the results of leak tests or other types of tank integrity examination. [40 CFR 264/265.191]

3.2 Module A: Integrity Testing for Existing Tanks

3.2.1 Introduction

This module addresses integrity assessments on existing HW tanks that lack secondary containment, including tanks that contain recently designated HWs. After a non-hazardous waste is classified as a HW by EPA, facility owners/operators must conduct an assessment of the existing tank system's integrity. This must be done within 12 months of the date the waste becomes a hazardous waste.

Owners/operators, in conjunction with an independent, certified engineer, need to carefully select the type of leak test to be performed to determine a tank's integrity. Leak testing methods must be designed to deal with potential sources of error in the data derived from the test, such as:

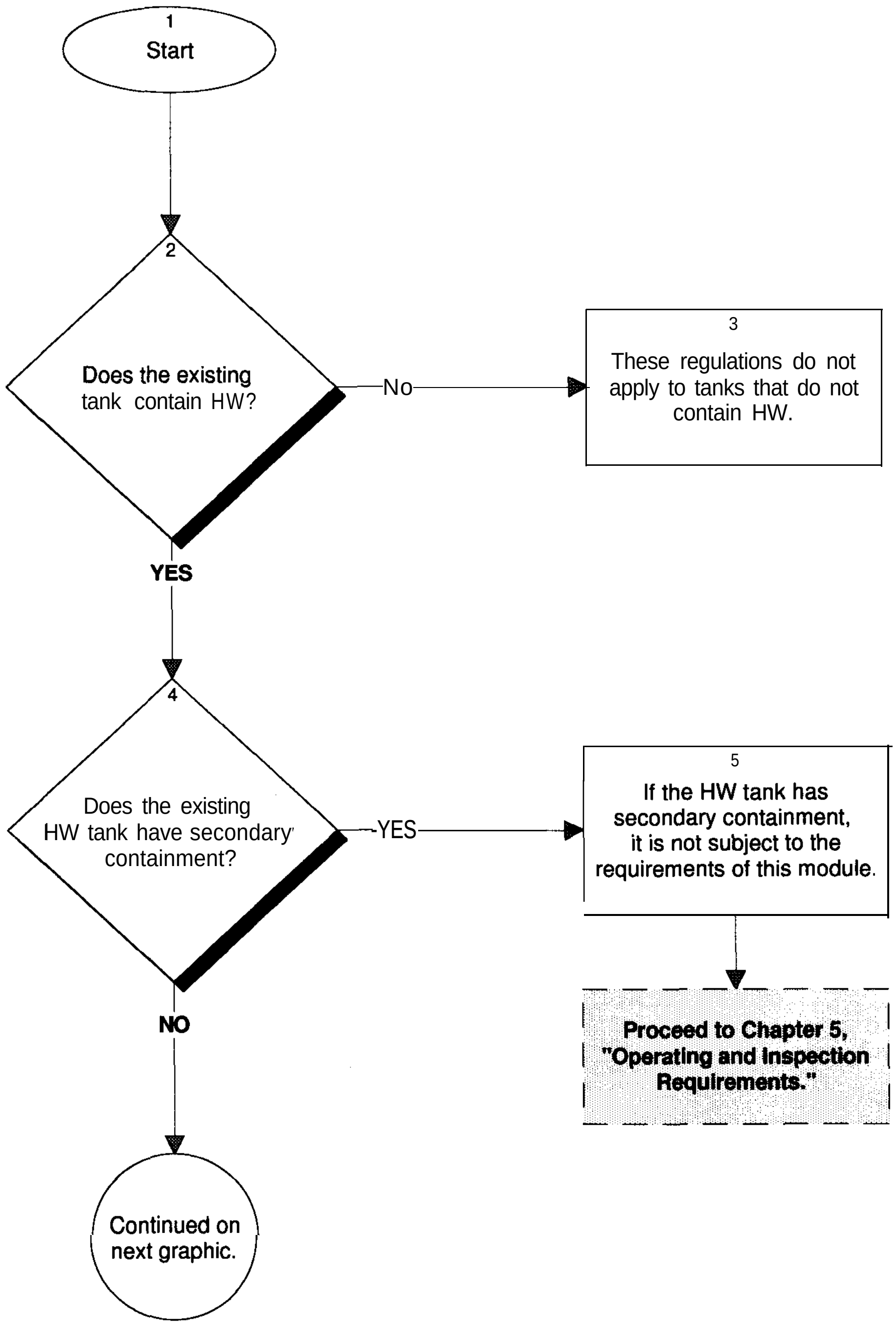
- Temperature changes during testing;
- Evaporation losses; and
- Volumetric changes of trapped air and vapor pockets in a tank and piping. [4]

3.2.2 Milestones

> ***Has the structural integrity of the existing HW tanks been certified?***
>
> Existing tanks that lack secondary containment:
>
> - Must have been assessed by January 12, 1988, or
> - Must be assessed within 12 months of the date that a non-hazardous waste in a tank is designated as HW by EPA.
>
> Existing HW tanks that were found to be leaking or otherwise unfit for service must be repaired or replaced as necessary before being certified and returned to use.

The following flowchart identifies the integrity testing requirements for existing HW tanks that lack secondary containment.

Figure 3.1: Integrity Testing for Existing Tanks



Step 1 Start

Step 2 If a non-HW that is currently being stored or treated in a tank is designated by EPA as a HW, that tank must receive an integrity assessment within 12 months of the date the non-hazardous waste became a HW.

Step 3 If the tank contains a substance other than a HW (such as a petroleum or chemical product), consult "Regulated Underground Storage Tanks" published by the DOE Office of Environmental Guidance (OEG) for assistance. [1]

Step 4 Secondary containment for HW tanks must include one or more of the following devices:

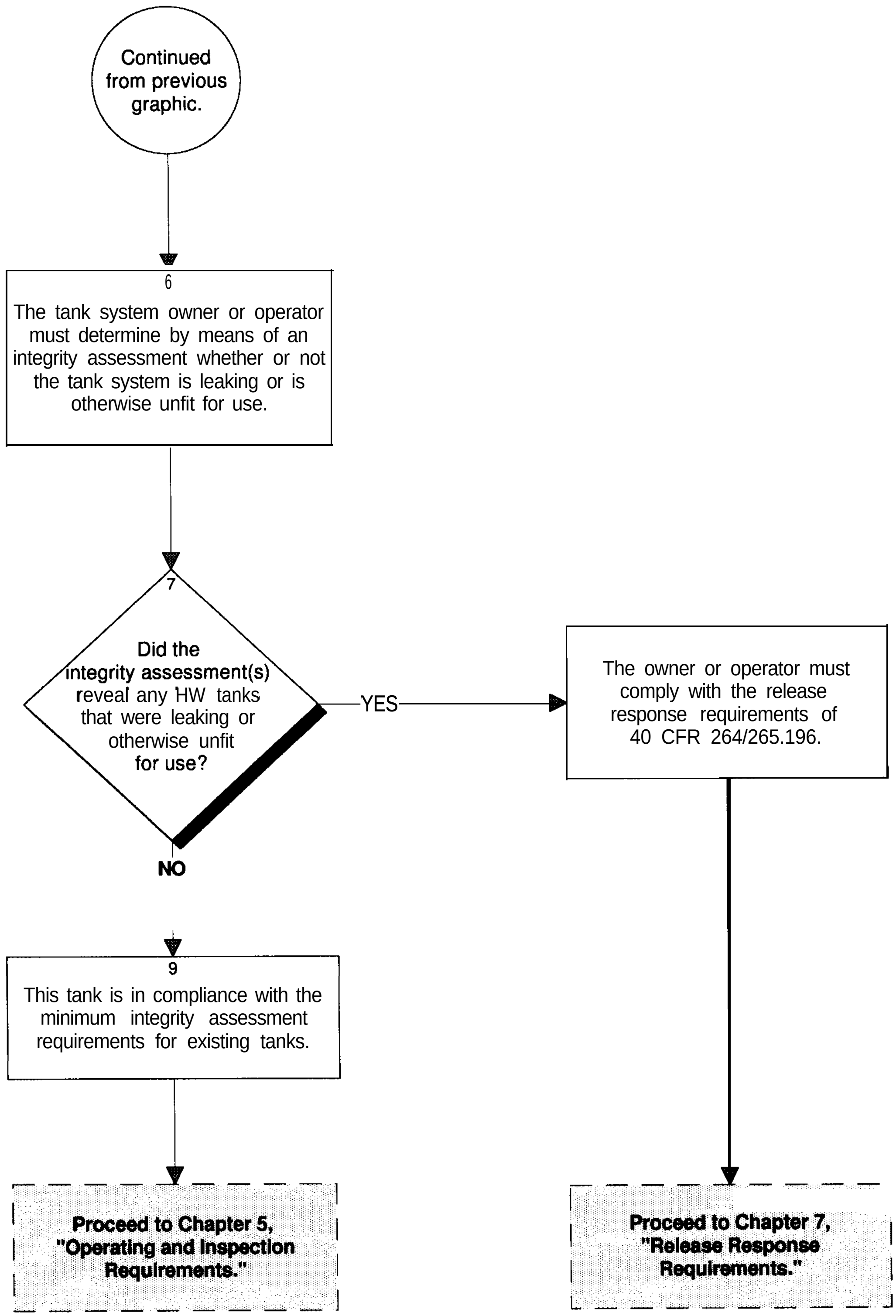
- A liner (external to the tank);
- A vault;
- A double-walled tank; or
- An equivalent device as approved by the Regional Administrator.

See Chapter 6, "Secondary Containment Requirements," for more details.

Step 5 Existing HW tanks were temporarily excluded from the secondary containment requirements of 40 CFR 264/265.193. Instead, existing tanks must be assessed to determine the structural integrity of the tank. All existing HW tanks must eventually receive secondary containment, but the schedule of compliance varies from that for new tanks.

- New tank systems must be provided with secondary containment prior to being placed into service;
- All existing tank systems used to store or treat EPA "F listed" hazardous wastes, Numbers F020, F021, F022, F023, F026, and F027, must have received secondary containment by January 12, 1989 (See Chapter 1, Section 1.2, for the definition of "F listed" wastes);
- For existing tank systems of known and documented age, secondary containment must have been provided by January 12, 1989, or when the tank system has reached 15 years of age, if that date is later; and
- For existing tank systems for which the age cannot be documented, secondary containment must be installed by January 12, 1995; but if the age of the **facility** is greater than 7 years, secondary containment must be provided by the time the **facility** reaches 15 years of age, or by January 12, 1989, whichever is later.

Existing tanks with secondary containment are not subject to integrity testing requirements.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6
The tank system owner or operator must determine by means of an integrity assessment whether or not the tank system is leaking or is otherwise unfit for use.
7
Did the integrity assessment(s) reveal any HW tanks that were leaking or otherwise unfit for use?
YES
The owner or operator must comply with the release response requirements of 40 CFR 264/265.196.
NO
9
This tank is in compliance with the minimum integrity assessment requirements for existing tanks.
Proceed to Chapter 5, "Operating and Inspection Requirements."
Proceed to Chapter 7, "Release Response Requirements."

Step 6 This integrity assessment must determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the HW to be stored or treated to ensure that it will not collapse, rupture, or fail. At a minimum, this assessment must consider the following:

- Design standard(s), if available, according to which the tank and ancillary equipment were constructed;

  Note: Items for which design standards are needed include tank wall thickness, vents [both operating and emergency vents], pipes, valves, fittings, pumps, and other ancillary equipment; [4]

- Characteristics of the HW that have been and will be handled;
- Existing corrosion protection measures;
- Documented age of the tank system, if available (otherwise, an estimate of the age); and
- Results of a leak test, internal inspection, or other tank integrity examination such that:
  - For **non-enterable** underground tanks, the assessment must include a leak test that is capable of taking into account the effects of temperature variations, tank end deflection, vapor pockets, and high water table effects; and
  - For **enterable** underground tanks and for ancillary equipment, this assessment must include either a leak test, as described above, or other integrity examination that is certified by an independent, qualified, registered professional engineer in accordance with 40 CFR 270.11(d). For a facility that is requesting permitted status, the assessment must address the presence of cracks, leaks, corrosion, and erosion. An interim status facility does not need to submit the assessment to the Regional Administrator.

The owner or operator must obtain and file at the facility a written assessment reviewed and certified by an independent, qualified, registered professional engineer, in accordance with 40 CFR 270.11(d), that attests to the tank system's integrity.

Step 7 If an integrity assessment uncovers a leaking HW tank, it must be removed from service and repaired or replaced before resuming operation.

Step 8 See Chapter 7, "Release Response Requirements," if the integrity assessment uncovers a HW tank that is leaking. Chapter 7 contains the requirements from 40 CFR 264/265.196 for repairing leaking HW tanks and for reporting releases of HWs to the appropriate authorities.

Step 9 Completing the leak test satisfies the minimum integrity assessment requirements for existing tanks. However, if the owner or operator wishes to conduct other integrity assessments beyond a leak test, he/she should consult the practices described in the American Petroleum Institute (API) publication, *Guide for Inspection of Refinery Equipment*, Chapter XIII, "Atmospheric and Low-Pressure Storage Tanks." [5]

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Chapter 4
New Tank Construction and Installation Requirements

Contents

4.1 Introduction

4.1.1 Background

The design of a new HW tank must be adequate to ensure that the tank can safely store or treat HW for its intended lifetime. EPA requires the inclusion of a written design assessment with the submission of Part B of the permit application. This design assessment should include detailed charts and drawings in addition to written descriptions. Basic design information for many common types of HW tanks are available from the manufacturers of the tanks and fittings. Professional societies such as the National Association of Corrosion Engineers are also good sources of information for design specifications. The assessment must also contain a certification of the tank's acceptability for storing HW.

After providing an adequate design assessment for the new HW tank(s), the owner or operator must have the new HW tank inspected after installation to confirm that it was not damaged during installation. Any damage that does occur must be repaired before the HW tank is placed into operation.

4.1.2 Major Requirements

These requirements apply only to new HW tanks.

- **Module A: Design, Installation, and Assessment of New Tank Systems or Components.** This module addresses those requirements that must be met to safely construct and install new HW tanks. It also addresses requirements for conducting an assessment of the HW tank system's design. This design assessment must be conducted before the new HW tank is constructed or installed.

4.2 Module A: Design, Installation, and Assessment of New Tank Systems or Components

4.2.1 Introduction

Owners or operators of new HW tank systems must provide EPA with a written assessment of the system's structural integrity and acceptability for the storage or treatment of HW. This assessment will be used by a Regional Administrator of the EPA to review and approve, or to disapprove, the tank system's design.

The design of new HW tanks must take into consideration many diverse environmental factors including geology, climate, and soil chemistry. Other factors that must be considered include the characteristics of the HW that is scheduled for storage or treatment in the new tank. These characteristics (e.g., ignitability, corrosiveness, and/or reactivity) may influence the type of tank material chosen (these characteristics are defined in Chapter 1, Section 1.2). The radioactive component of mixed HWs may also influence the type of HW tank material selected. Types of material available include fiberglass-reinforced plastic, concrete, and steel along with various other metal alloys and composite materials.

After the design has been approved by the Regional Administrator, the tank must be installed without incurring damage. After installation, the tank must be inspected for possible damage; if damage has occurred, the tank must be repaired before being placed into operation.

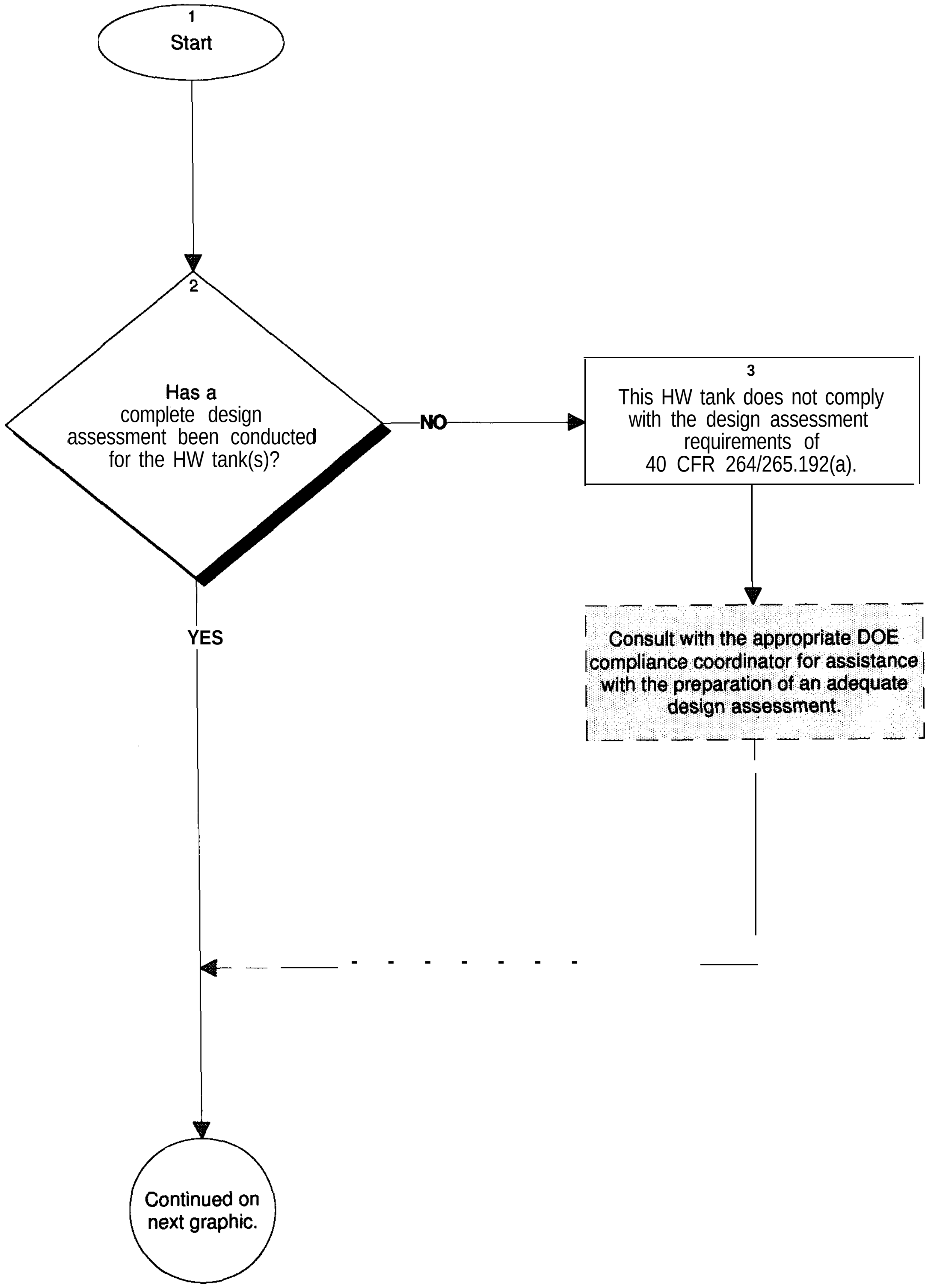
4.2.2 Milestones

Has the tank been adequately designed, installed, and assessed?

- The design must be adequate to provide safe containment of the HW.
- The installation and subsequent inspection of the installation must ensure that the installation process has not damaged the HW tank.

The following flowchart describes design, installation, and assessment requirements for new HW tanks.

Figure 4.1: Design, Installation, and Assessment of New Tank Systems or Components



Step 1 Start

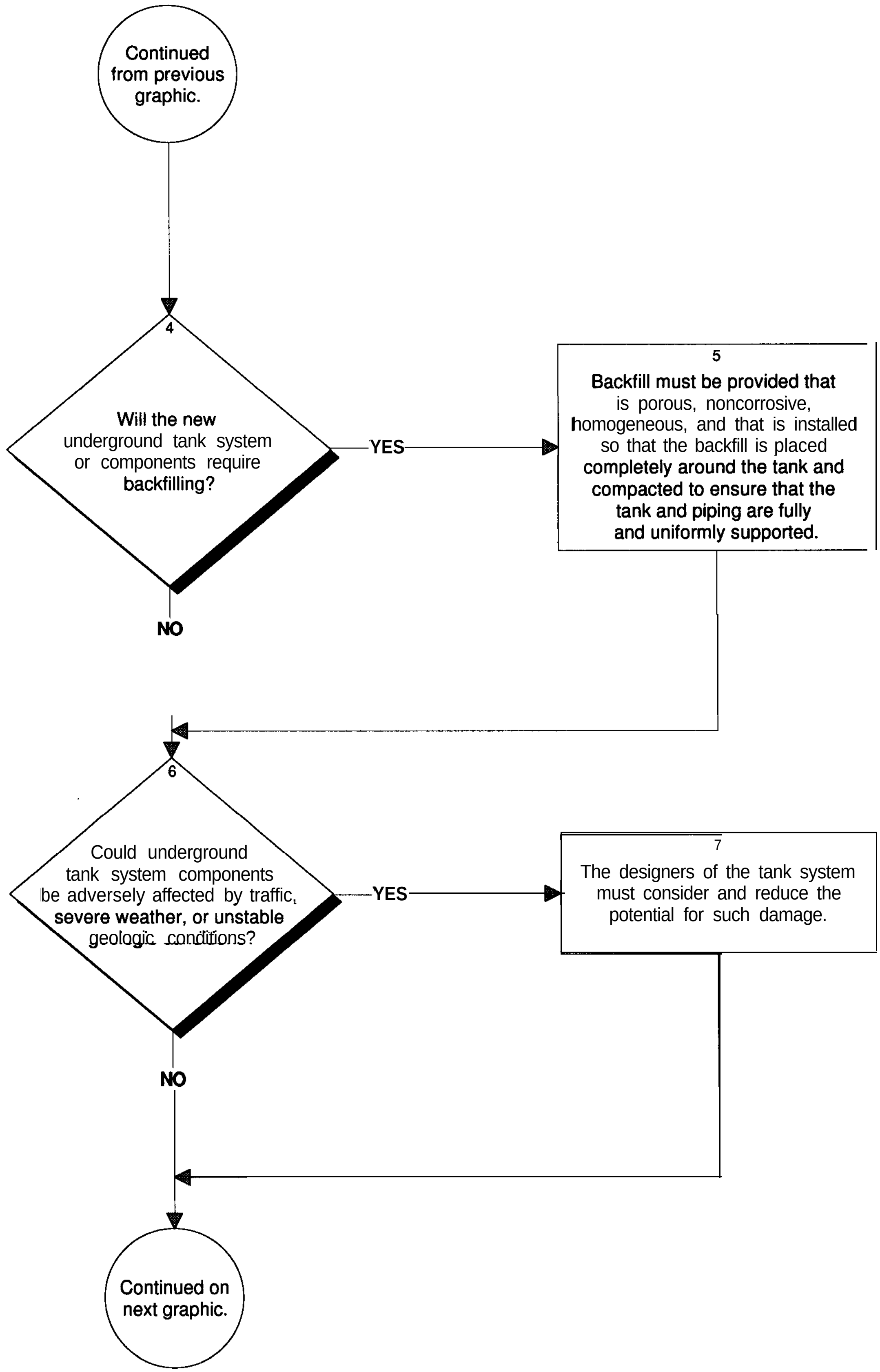
Step 2 Owners or operators of new HW tank systems or components must obtain a written assessment of the HW tank's design. This assessment must be reviewed and certified by an independent, qualified, registered professional engineer, in accordance with 40 CFR 270.11(d). The assessment must be submitted to the Regional Administrator, for approval, with Part B of the permit application. An interim status facility does not need to submit the assessment to the Regional Administration.

The assessment must show that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed, and that the tank system has sufficient structural strength, and compatibility with the HW being stored or treated to ensure that it will not collapse, rupture, or fail. It must include, at a minimum, the following information:

- Design standard(s) according to which tank(s) and/or ancillary equipment are constructed;
- Characteristics of the HW to be handled;
- The following determinations by a corrosion expert, if the external shell of a metal tank or any external metal component of the tank system will be in contact with the soil or water:
  - Factors affecting the potential for corrosion, including but not limited to:
    (a) Soil: moisture content, pH, sulfide levels, resistivity, and structure-to-soil potential;
    (b) Influence of nearby underground metal structures such as piping;
    (c) Existence of stray electric current;
    (d) Existing corrosion-protection measures; and
  - The type and degree of external corrosion protection needed to ensure the integrity of the tank system, consisting of one or more of the following:
    (a) Corrosion-resistant materials of construction such as special alloys, fiberglass reinforced plastic, etc.;
    (b) Corrosion-resistant coating with cathodic protection such as impressed current or sacrificial anodes (see the Glossary in Appendix A for these definitions); and
    (c) Electrical isolation devices such as insulating joints.

Note: The practices described in the National Association of Corrosion Engineers [NACE] standard, "Recommended Practice [RP-02-85]--Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems" and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems" may be used. [6], [7]

Step 3 If the design assessment does not address all required elements, it cannot be used to provide proof of the safety of the proposed HW tank. [4]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4
Will the new underground tank system or components require backfilling?
YES
NO
5
Backfill must be provided that is porous, noncorrosive, homogeneous, and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.
6
Could underground tank system components be adversely affected by traffic, severe weather, or unstable geologic conditions?
YES
NO
7
The designers of the tank system must consider and reduce the potential for such damage.
Continued on next graphic.

Step 4 Backfill often provides vital structural support to the HW tank and ancillary equipment. For example, uniform, well compacted backfill provides much (up to 90%) of a fiber-reinforced plastic tank's structural support.

Step 5 The use of inappropriate backfill material can void a manufacturer's warranty. Backfill material for steel or composite tanks is different from that for nonmetallic tanks. Generally, steel or composite tanks should be backfilled with washed, well granulated, free-flowing sand or gravel that is not bigger than 1/8 inch. Nonmetallic tanks should be backfilled with pea gravel (rounded particles between 1/8 and 3/4 inch) or crushed rock or gravel (defined as washed and free-flowing angular particles between 1/8 and 1/2 inch). [4]

Step 6 Operational measures that can be used to reduce excessive vehicular loads on a HW tank include instituting a weight limit on vehicles traveling above a HW tank (or system components) and/or constructing barricades or guardrails around those tank system components that are susceptible to damage from heavy loads. [4]

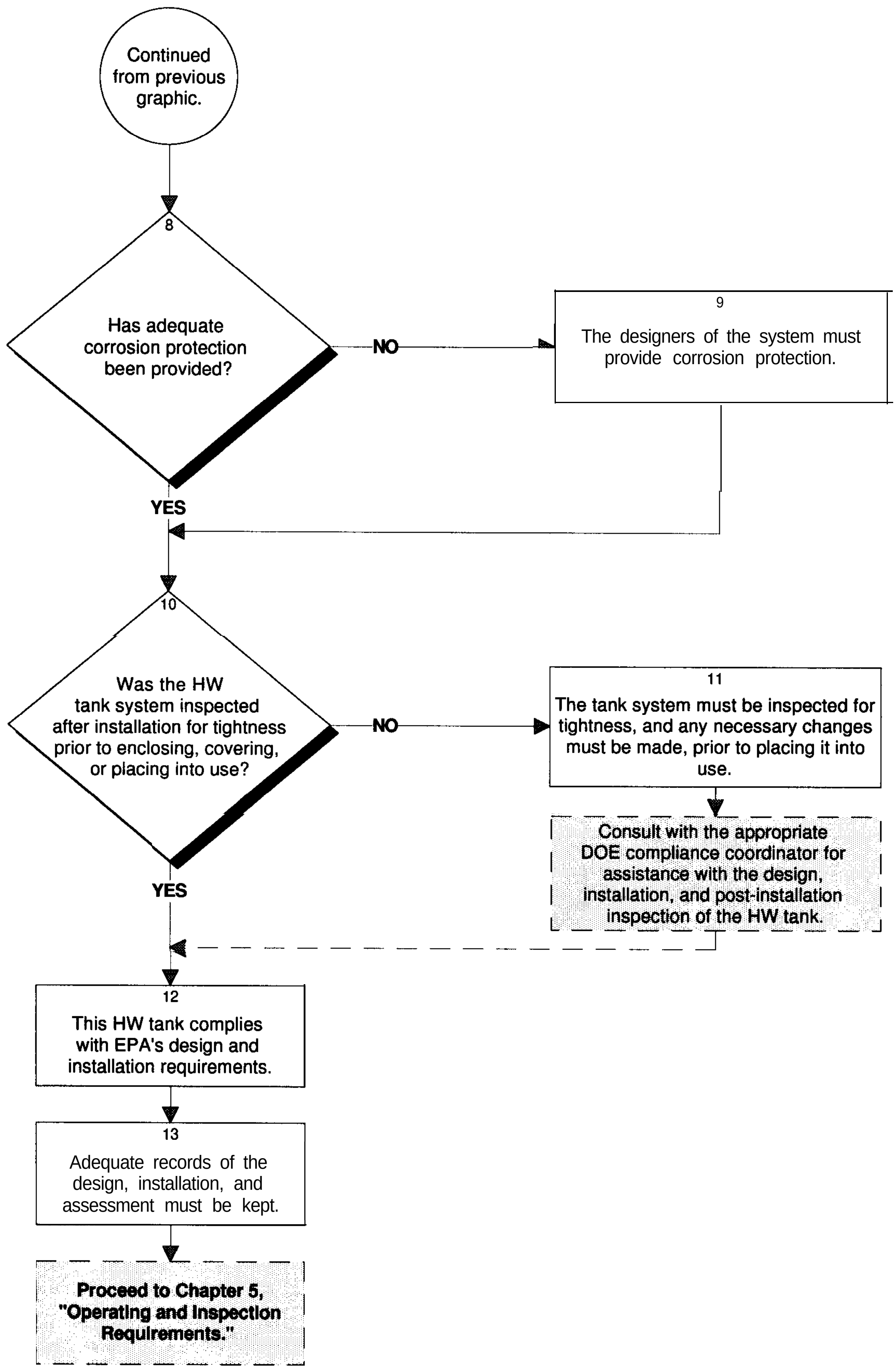
The design of the HW tank must also protect the tank from severe weather or unusual geologic conditions. The designers must ensure (where necessary) that:

- Tank foundations will maintain the load of a full tank;
- Tank systems will be anchored to prevent flotation or dislodgment where the tank system is placed in a saturated zone or is located within a seismic fault zone subject to the location standards of 40 CFR 264/265.18(a); and
- Tank systems will withstand the effects of frost heave.

Ancillary equipment must be supported and protected against physical damage and excessive stress due to vibration, expansion, or contraction.

Step 7 The designers may need to scale down the size of the proposed HW tank or use alternative materials to reduce the potential for damage to the HW tank system by traffic or other hazards. The consideration of damage by traffic may be very important when replacing a HW tank in an area that has grown in size/density since the placement of the original HW tank (or in an area for which growth is planned).

Note: The piping system installation procedures described in API Publication 1615, "Installation of Underground Petroleum Transportation Piping System," may be used, where applicable, as guidelines for proper installation of piping systems. [8]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8
Has adequate corrosion protection been provided?
NO
9
The designers of the system must provide corrosion protection.
YES
10
Was the HW tank system inspected after installation for tightness prior to enclosing, covering, or placing into use?
NO
11
The tank system must be inspected for tightness, and any necessary changes must be made, prior to placing it into use.
Consult with the appropriate DOE compliance coordinator for assistance with the design, installation, and post-installation inspection of the HW tank.
YES
12
This HW tank complies with EPA's design and installation requirements.
13
Adequate records of the design, installation, and assessment must be kept.
Proceed to Chapter 5, "Operating and Inspection Requirements."

Step 8 The owner or operator must provide the type and degree of corrosion protection recommended by an independent corrosion expert (based on the information provided under Step 2) or other corrosion protection (if the Regional Administrator believes other corrosion protection is necessary) to ensure the integrity of the tank system during its use. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert.

Step 9 Without adequate corrosion protection, the HW tank is not only in a state of non-compliance with the regulations, it also is susceptible to premature failure due to exposure to corrosion-inducing elements (e.g., water or acidic soil conditions). [4]

Step 10 To prevent damage to the system during installation, the owner or operator of a new tank system must ensure that proper handling procedures are followed. An independent, qualified installation inspector or registered professional engineer, trained and experienced in the proper installation of tank systems or components, must inspect the system. He/she must test and search for the presence of weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, or other structural damage or inadequate construction/installation.

Once the HW tank has been designed, installed, and assessed in accordance with EPA regulations, a copy of the written assessment of the HW tank system's design must be included in Part B of the permit application as specified in 40 CFR 270.16.

Step 11 All necessary repairs must be made before the tank system is covered, enclosed, or placed in use. A repaired tank or piping that is partially or totally below ground level should be retested before backfilling or burial.

Step 12 While this HW tank complies with the minimum design and installation requirements for HW tanks, the Regional Administrator may impose additional requirements (as needed) as a condition of the permit application.

Step 13 The owner or operator must obtain and keep on file at the facility written statements by those persons required to certify the design of the tank system and supervise its installation, attesting that the tank system was properly designed and installed, and that repairs (where necessary) were performed. These written statements must also include the certification statement as required by 40 CFR 270.11(d).

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Chapter 5
Organic Air Emission Control Requirements for HW Tanks

Contents

5.1 Introduction

5.1.1 Background

On December 6, 1994, the Environmental Protection Agency promulgated the first of several final rules regulating volatile organic (VO) air emissions from certain waste management units, including HW tanks (. This rule has been codified as 40 CFR Parts 264/265, Subpart CC, Air Emission Standards for Tanks, Surface Impoundments, and Containers. These standards were established to control the formation of ambient ozone and to reduce adverse human health effects from the inhalation of air toxics. Under these standards, air emission controls must be used for tanks in which HW is placed except under certain conditions as specified in the rule.

The final Subpart CC tank standards are separated into two levels (Tank Level 1 and TankLevel 2). Tank Level 2 controls specify that the owner/operator must install and operate one of the following:

- A fixed-roof tank equipped with an internal floating roof;
- A tank equipped with an external floating roof;
- A tank vented through a closed-vent system to a control device;
- A pressure tank; or
- A tank located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device.

The rule also allows HW to be placed in tanks with a fixed roof equipped with closure devices that form a continuous barrier over the entire surface area of the hazardous waste in the tank (i.e., Tank Level 1 controls) provided three conditions are met. These three conditions are:

- The maximum organic vapor pressure (MOVP) of the HW in the tank must be less than the limit established in the rule based on tank design capacity;
- The waste is not heated to a temperature that is greater than the temperature at which the MOVP is determined, and
- No treatment using a waste stabilization process occurs in the tank.

This rule has been promulgated under the authority of RCRA Section 3004(n), a provision added to RCRA by the Hazardous and Solid Waste Amendments of 1984 (HSWA). Therefore, these requirements became effective in States with authorized RCRA programs at the same time as in States without authorized RCRA programs.

EPA required that owners/operators of TSDFs for which a final permit has been issued by the EPA prior to December 6, 1996, must comply with the air emission control requirements for interim status TSD facilities under 40 CFR Part 265, Subparts AA, BB, and CC until the facility’s permit is reviewed or reissued by the

EPA. In this instance, EPA has deviated from its normal practice of allowing regulated site's to use their "permit as a shield," because the Agency feels that the risks to human health and the environment from these VO air emissions is too great to allow any more time to pass before requiring compliance at permitted facilities.

5.1.2 Major Requirements

This chapter has been organized into six modules. Issues addressed in these modules include exemptions to the organic air emission control requirements for HW tanks, selection of appropriate covers and control devices, inspection and monitoring of covers, closed-vent systems and control devices, and recordkeeping and reporting requirements.

- Module A: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks
- Module B: General Organic Air Emission Control Requirements for HW Tanks
- Module C: Requirements for Closed-vent Systems and Control Devices
- Module D: Inspection and Monitoring
- Module E: Recordkeeping Requirements
- Module F: Reporting Requirements

The effective date for these regulations has been extended numerous times by the EPA. [See 60 *FR* 26828, 60 *FR* 56952, and 61 *FR* 59932]. Final Subpart CC standards became effective on **December 6, 1996**. These standards were issued in the following DOE-relevant *Hazardous Waste Treatment, Storage and Disposal Facilities: Organic Air Emission Standards for Tanks, Surface Impoundments, and Containers* notices:

- *Final Rule*, 59 FR 33490, December 6, 1994;
- *Final Rule, Notice of Postponement of Effective Date*, 60 FR 56952, November 13, 1995;
- *Final Rule, Technical Amendment*, 61 FR 4903, February 9, 1996;
- *Final Rule, Amendments of Final Rule To Postpone Requirements*, 61 FR 28508, June 5, 1996;
- *Final Rule*, 61 FR 59932, November 25, 1996;
- *Clarification and Technical Amendment*, 62 FR 64636, December 8, 1997; and
- *Final Rule*, 64 FR 3382, January 21, 1999.

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5.2 Module A: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks

5.2.1 Introduction

The EPA has provided several exemptions to the organic air emission control requirements of 40 CFR Parts 264/265, Subpart CC, for certain HW tanks that are no longer receiving waste. EPA has also deferred application of these regulations to HW tanks that are used solely to treat or store HW generated on-site from remedial activities conducted under RCRA or CERCLA authorities, or tanks that are used solely to manage radioactive mixed waste.

Owners/operators of HW tanks may also determine that the Subpart CC regulations do not apply to tanks under their authority based upon the average VO concentration of the HW: (1) at the point of waste origination, or (2) at the point of waste treatment by an organic destruction or removal process that achieves certain conditions. Also, owners/operators may determine that the Subpart CC regulations do not apply when certain treatment processes destroy, remove, or degrade organics such that conditional rates or efficiencies are realized. The owner/operator of such a tank, however, will need to comply with a few recordkeeping requirements found in Module 5E, Recordkeeping Requirements.

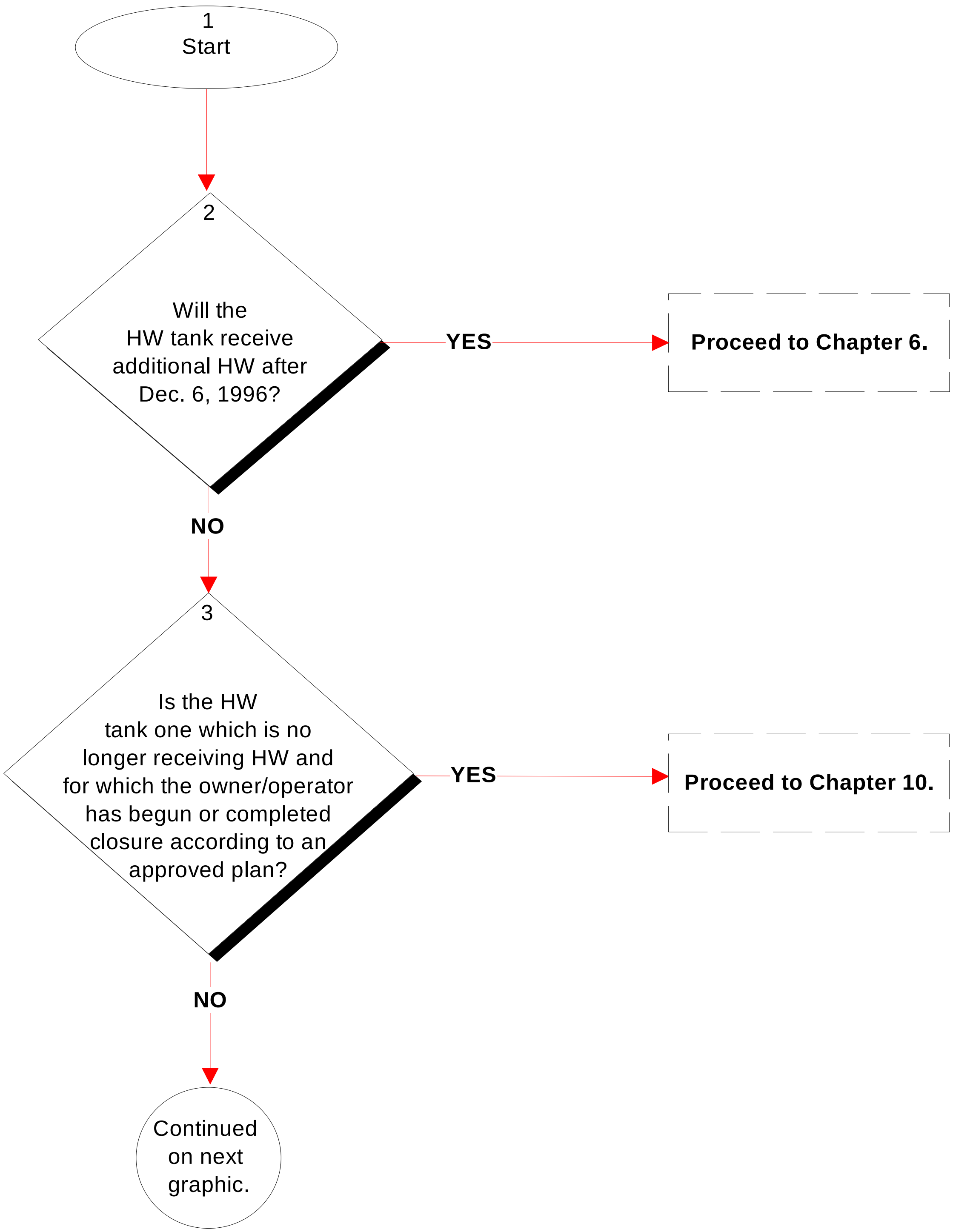
5.2.2 Milestones

Is the HW tank exempted from 40 CFR 264/265, Subpart CC regulations?

Exempted tanks that may be relevant to Departmental activities are those which:

- Are no longer receiving HW after December 6, 1996;
- Are no longer receiving HW and are being closed pursuant to an approved closure plan;
- Are being used for on-site treatment or storage of HW that is placed in the tank as a result of implementing remedial activities;
- Are being used solely for the management of radioactive mixed waste;
- Are equipped and operating in accordance with certain codified Clean Air Act (CAA) regulations, when applicable;
- Are equipped with process vents as defined in 40 CFR 264.1031;
- Are receiving a HW that has an average volatile organic (VO) concentration at the point of waste origination of less than 500 parts per million by weight (ppmw);
- Are receiving a HW whose organic content has been reduced by a destruction or removal process that meets prescribed conditions;
- Receive HW that meets all applicable concentration-based or specified technology-based land disposal restrictions (LDR) treatment standards; and
- Are located inside an enclosure vented to a 40 CFR part 61, Subpart FF control device that is used for bulk feed of hazardous waste to an incinerator.

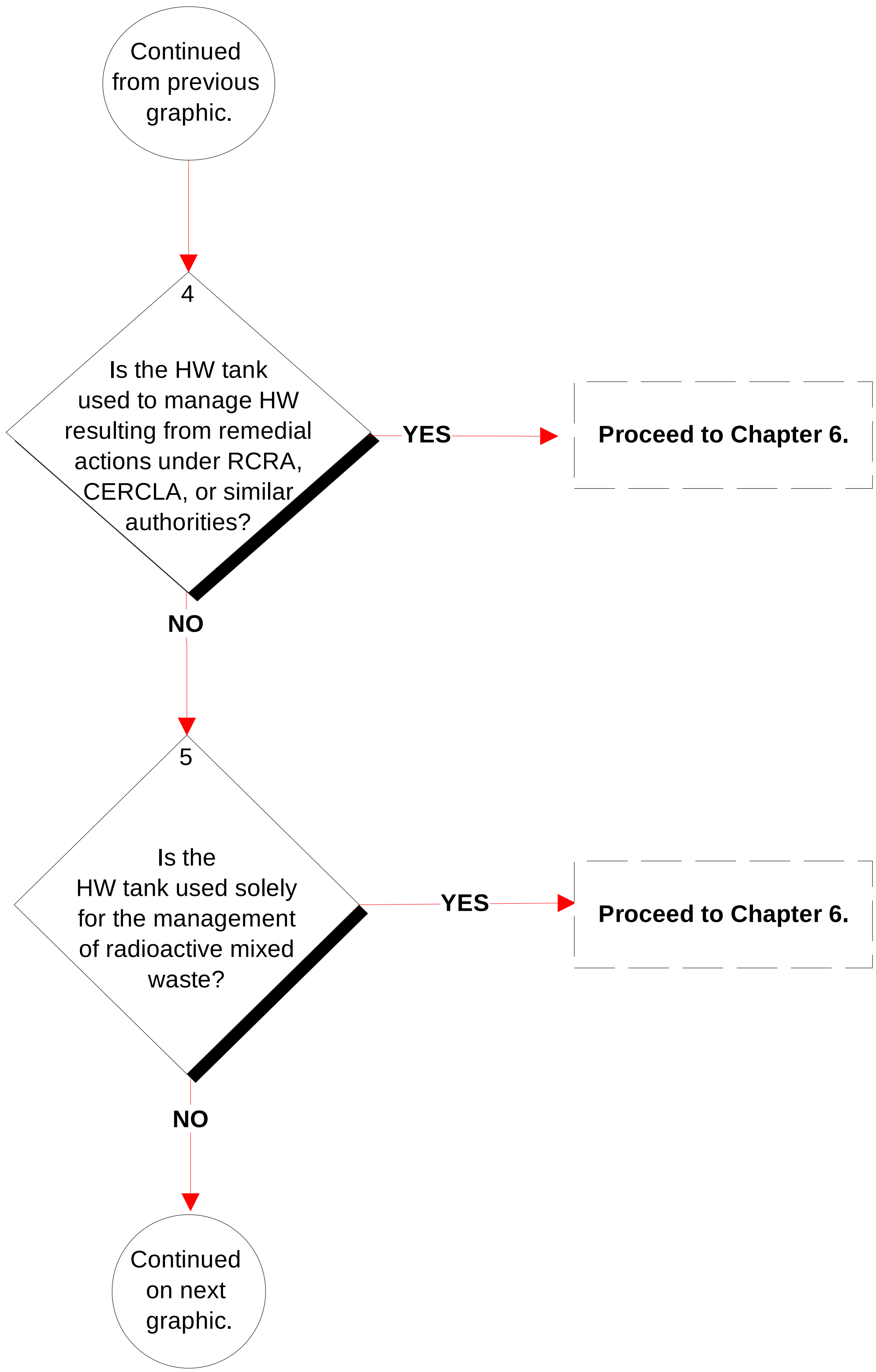
Figure 5.1: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks



Step 1 Start.

Step 2 A waste management unit that holds HW placed in the unit before December 6, 1996, and in which no HW is added to the unit on or after December 6, 1996, is exempted from the requirements of 40 CFR Part 264/265, Subpart CC: Air Emission Standards for Tanks, Surface Impoundments, and Containers.

Step 3 A tank which is no longer receiving HW and for which closure has begun or has been completed is not subject to the requirements of 40 CFR Part 264, Subpart CC: Air Emission Standards for Tanks, Surface Impoundments, and Containers.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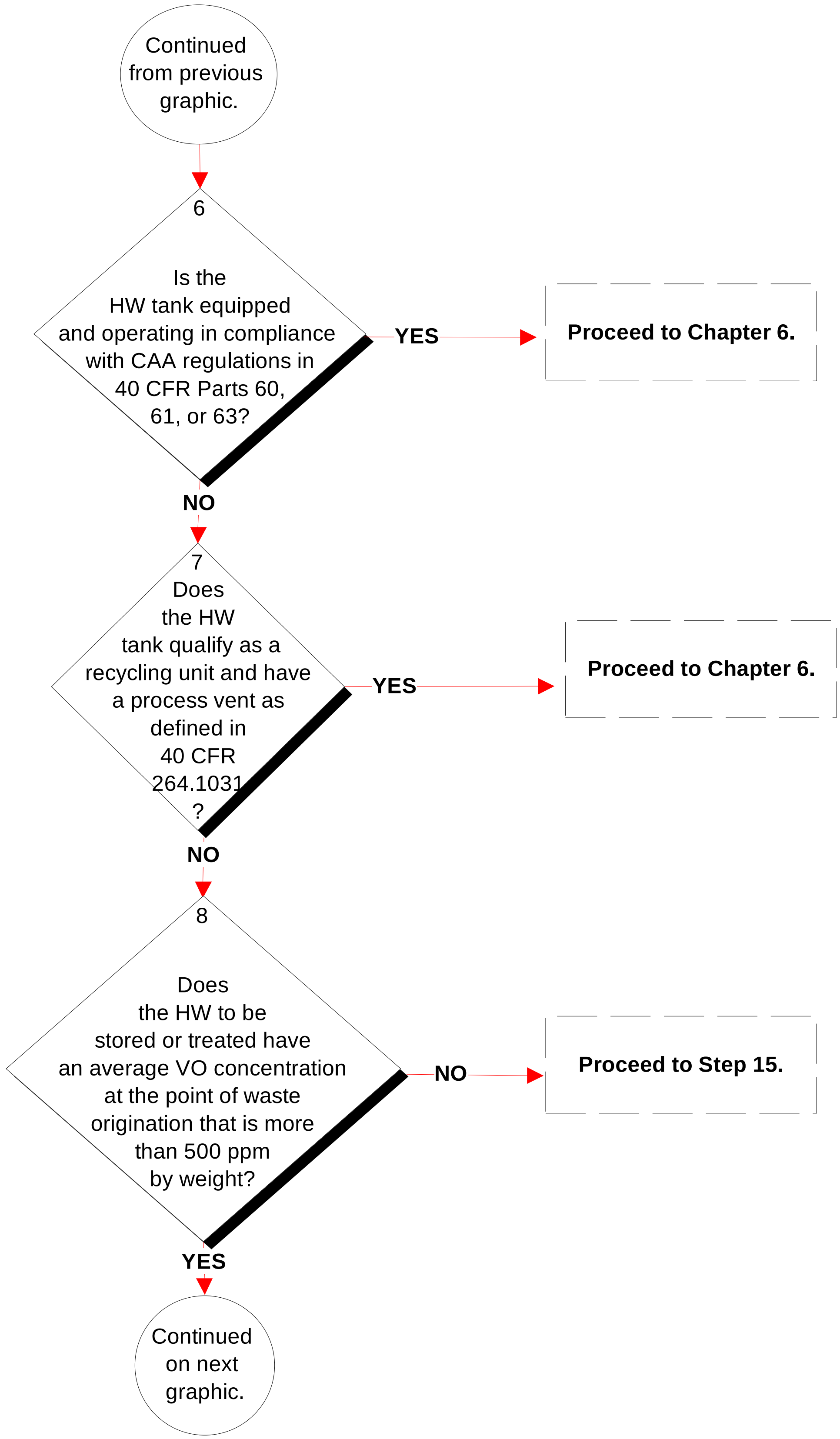
4
Is the HW tank used to manage HW resulting from remedial actions under RCRA, CERCLA, or similar authorities?
YES
Proceed to Chapter 6.
NO
5
Is the HW tank used solely for the management of radioactive mixed waste?
YES
Proceed to Chapter 6.
NO
Continued on next graphic.

Step 4 A waste management unit that is used solely for on-site treatment or storage of HW that is placed into the tank as the result of implementing remedial activities required under:

- RCRA Sections 3004(u), 3004(v) or 3008(h) corrective action authorities;
- CERCLA authorities; or
- Similar Federal or State authorities;

is not subject to the requirements of 40 CFR Parts 264/265, Subpart CC: Air Emission Standards for Tanks, Surface Impoundments, and Containers.

Step 5 A waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act. Further clarification of this exemption is provided in an EH-413 Technical Assistance Project (TAP) titled *RCRA Subpart CC Organic Air Emission Standards Technical Amendment: Questions and Answers, DOE/EH(RCRA)-9701 (March 1997)*.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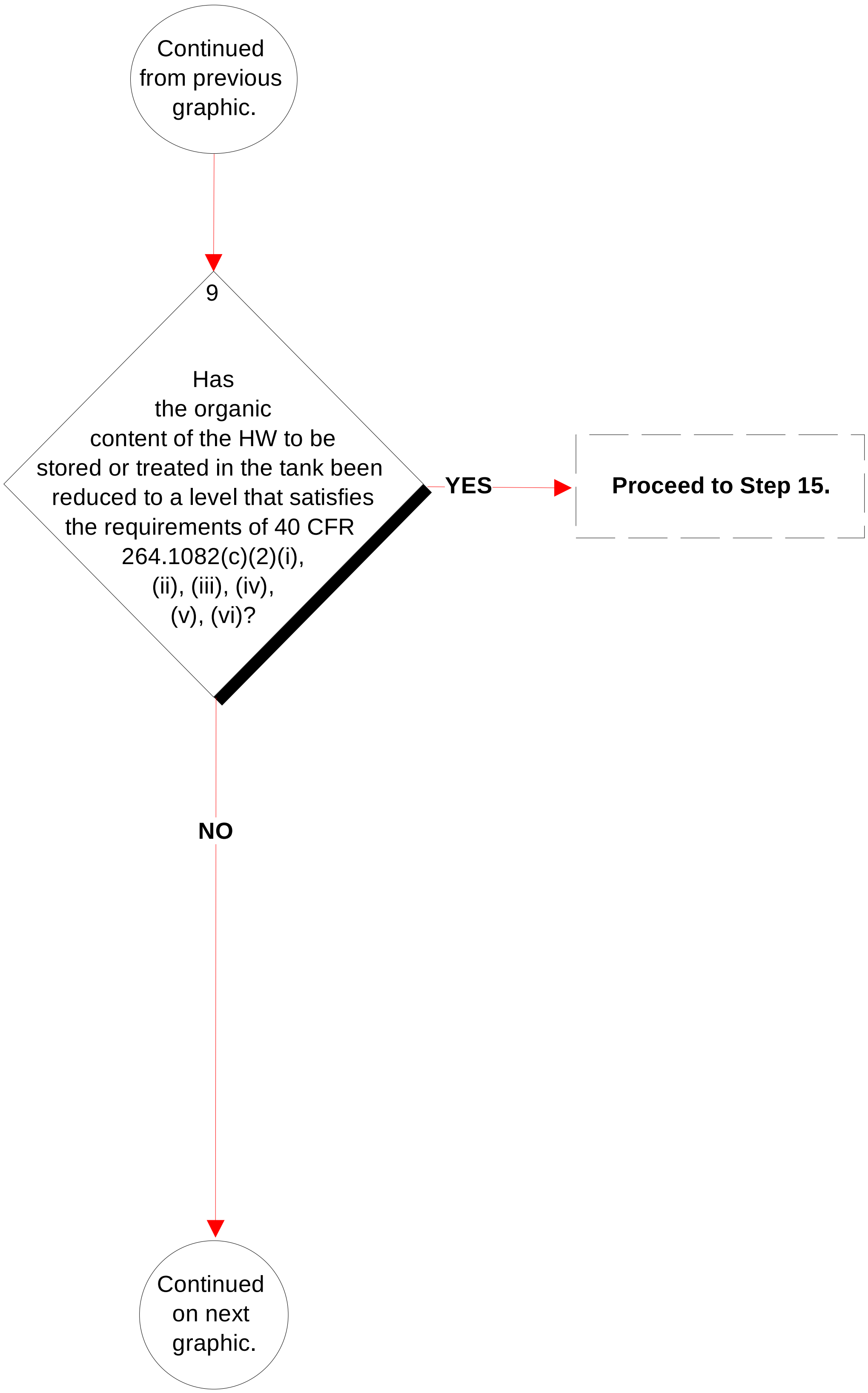
6
Is the HW tank equipped and operating in compliance with CAA regulations in 40 CFR Parts 60, 61, or 63?
YES
Proceed to Chapter 6.
NO
7
Does the HW tank qualify as a recycling unit and have a process vent as defined in 40 CFR 264.1031 ?
YES
Proceed to Chapter 6.
NO
8
Does the HW to be stored or treated have an average VO concentration at the point of waste origination that is more than 500 ppm by weight?
NO
Proceed to Step 15.
YES
Continued on next graphic.

Step 6 To eliminate any regulatory overlap, EPA exempts from Subpart CC any HW tank that the owner or operator certifies is equipped with and operating organic air emission controls in accordance with an applicable CAA regulation codified under 40 CFR part 60, part 61, or part 63, with the sole exception of tanks being controlled through the use of an enclosure rather than a cover. Note that a unit that does not use the required air emission controls but is in compliance with a NESHAP through an "emission averaging" or "bubbling" provision does not qualify for the exemption. Similarly, if the CAA standard for the particular unit is no control, the exemption from the RCRA standards would not apply.

Step 7 Regulations for recyclable materials at 40 CFR 261.6(d) do not require that recycling units must comply with the Subpart CC provisions. Rather, recycling units typically emit air pollutants through some type of process vent and consequently are controlled under the 40 CFR Parts 264/265, Subpart AA standards. Emission mechanisms for conventional HW storage tanks differ significantly from the emission mechanism of the distillation-type unit used for recycling and certain treatment operations (e.g., air strippers, thin-film evaporators) regulated under Subpart AA. Thus, suppression-type controls (e.g., covers) prescribed for conventional storage and treatment tanks in Subpart CC simply are not suitable for most distillation-type units.

Step 8 If the average VO concentration of the hazardous waste at the point of waste origination is less than 500 parts per million by weight (ppmw), the HW storage or treatment tank will not be subject to the requirements of 40 CFR Part 264.1084 (Standards: Tanks) and 264.1087 (Standards: Closed-vent Systems and Control Devices). The VO concentration at the point of waste origination for a HW shall be determined in accordance with the procedures specified in 40 CFR 265.1084(a)(2) through (a)(4). See Appendix E for these procedures.

Figure 5.1: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks - continued



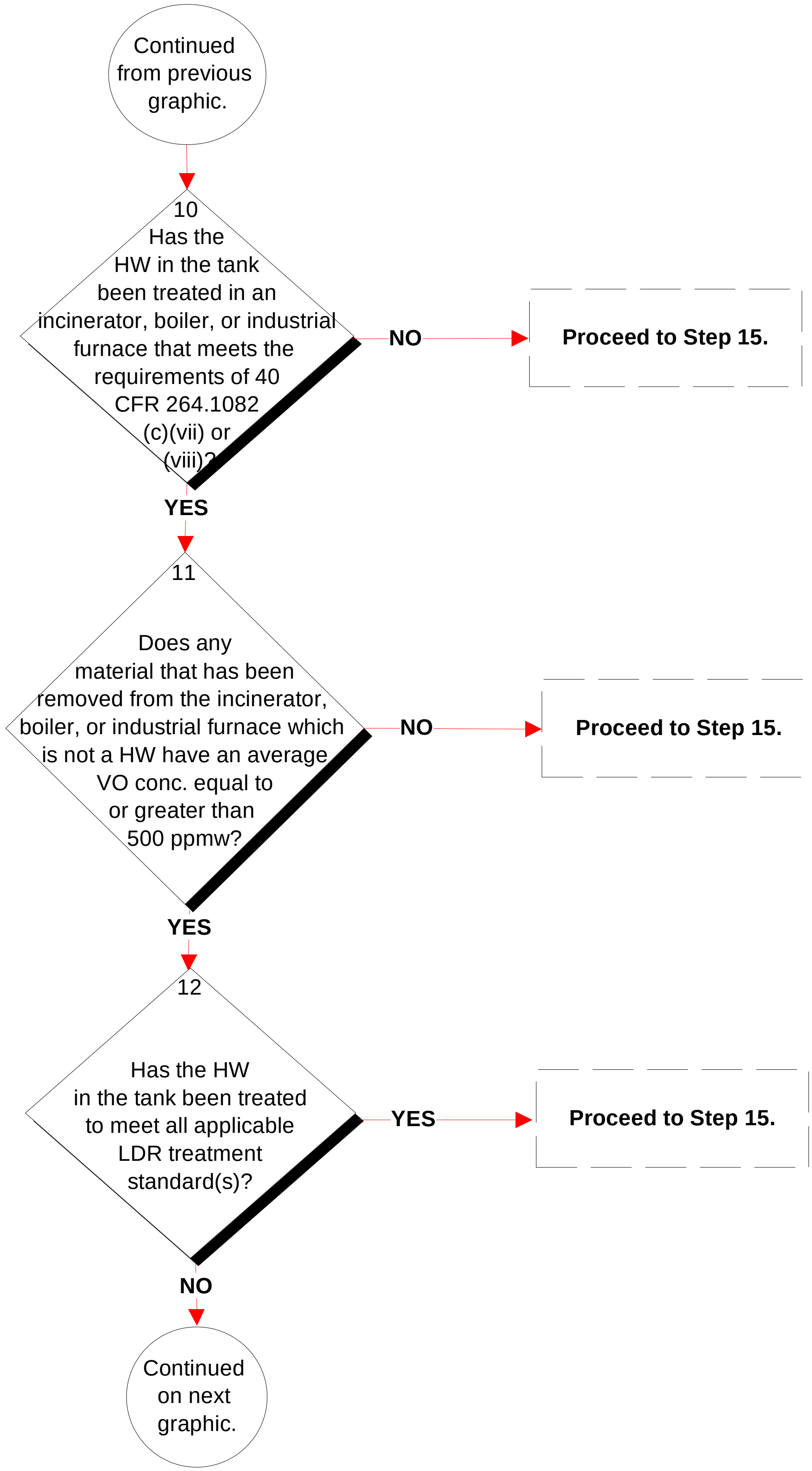
Step 9 The VO content may be reduced by a process that achieves any one of the following:

- Removal or destruction of the organics contained in the HW to a level such that:
  - The average VO concentration of the HW at the point of waste treatment is less than the exit concentration limit (C_t); or
  - The organic reduction efficiency (R) is equal to or greater than 95 percent, and the average VO concentration of the HW at the point of waste treatment is less than 100 ppmw; or
  - The actual organic mass removal rate (MR) is equal to or greater than the required organic mass removal rate (RMR); or
- Biological destruction or degradation of the organics contained in the HW, such that either of the following conditions is met:
  - The R for the process is equal to or greater than 95 percent, and the organic biodegradation efficiency (R_{bio}) is equal to or greater than 95 percent; or
  - The total actual organic mass biodegradation rate (MR_{bio}) for all HW treated is equal to or greater than the RMR; or
- Removal or destruction of the organics contained in the HW and meets all of the following conditions:
  - From the point of waste origination through the point where the HW enters the treatment process, (1) the HW is managed continuously in waste management units that use RCRA Subpart CC organic air emission controls, as applicable; and (2) any transfer of the HW is accomplished through continuous hard-piping or other closed system transfer that does not allow exposure of the waste to the atmosphere. [NOTE: EPA considers a drain system that meets the requirements of 40 CFR part 63, subpart RR--National Emission Standards for Individual Drain Systems to be a closed system.]; and
  - The average VO concentration of the HW at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual HW streams entering the process or 500 ppmw, whichever value is lower; or
- Removal or destruction of the organics contained in the HW to a level such that the R for the process is equal to or greater than 95 percent and the owner or operator certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw.

Note: The average VO concentration of the HW at the point of waste treatment shall be determined using the procedure specified in 40 CFR 265.1083(b). See Appendix E for the procedures to be used to determine the average VO concentration of the HW at the point of waste treatment, the C_t, the R, MR, RMR, R_{bio}, and the MR_{bio}.

[40 CFR 264.1082(c)(2)(i), (ii), (iii), (iv), (v), (vi)]

Figure 5.1: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks - continued



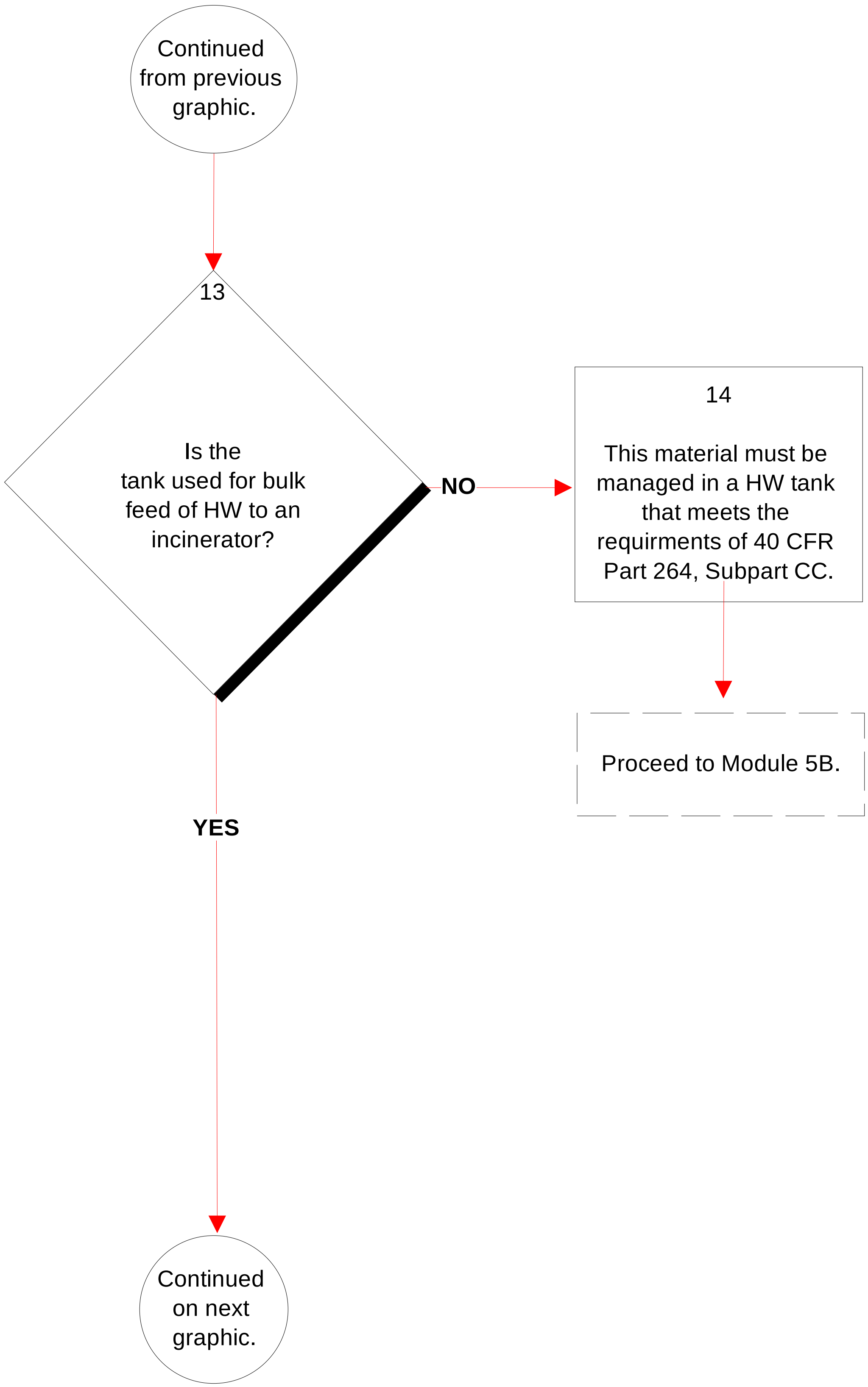
Step 10 The owner/operator may use a HW incinerator, boiler, or industrial furnace to reduce the organic content of the HW. If the incinerator, boiler, or industrial furnace meets the following conditions, the owner/operator will not be subject to the requirements of 40 CFR 264.1084 and 264.1087:

- A HW incinerator for which the owner/operator has either:
  - Been issued a final permit under 40 CFR Part 270, and operates the unit in accordance with the requirements of 40 CFR Part 264, Subpart O; or
  - Designed and operates the unit in compliance with the interim status requirements of 40 CFR Part 265, Subpart O.
- A boiler or industrial furnace for which the owner/operator has either:
  - Been issued a final permit under 40 CFR Part 270, and operates the unit in accordance with the requirements of 40 CFR Part 266, Subpart H; or
  - Designed and operates the unit in compliance with the interim status requirements of 40 CFR Part 266, Subpart H.

Step 11 When a removal process or an incinerator, boiler, or industrial furnace, is used for the purpose of treating a HW to meet one of the sets of conditions specified in Step 9 or Step 10, each material removed from or exiting the process that is not a HW but that has an average VO concentration equal to or greater than 500 ppmw shall be managed in a waste management unit in accordance with the requirements of 40 CFR Part 264, Subpart CC.

If the selected waste management unit is a HW tank, that tank will have to meet the requirements of 40 CFR Part 264, Subpart CC.

Step 12 HW tanks receiving hazardous waste for which the organic hazardous constituents have been treated to meet applicable LDR treatment standards by: (1) Being treated to meet the numerical, concentration-based limits, as specified in 40 CFR 268.40, table "Treatment Standards for Hazardous Waste," including universal treatment standards for underlying hazardous constituents under 40 CFR 268.48; (2) Being treated using the treatment technology established by EPA for the waste in 40 CFR 268.42(a); or (3) Being treated by an equivalent method of treatment approved by EPA pursuant to 40 CFR 268.42(b).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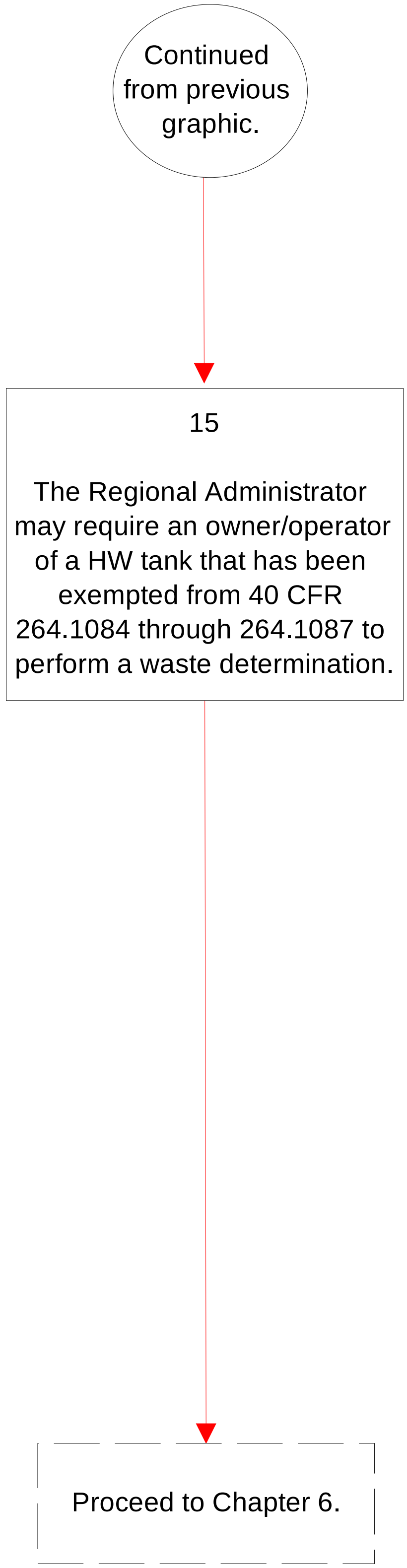
13
Is the tank used for bulk feed of HW to an incinerator?
NO
14
This material must be managed in a HW tank that meets the requirments of 40 CFR Part 264, Subpart CC.
Proceed to Module 5B.
YES
Continued on next graphic.

Step 13 HW tanks used for bulk feed of hazardous waste to a waste incinerator are exempt from HW tank standards provided all of the following conditions are met:

- The tank is located inside an enclosure vented to a control device that is designed and operated in accordance with all applicable requirements specified under 40 CFR part 61, subpart FF--National Emission Standards for Benzene Waste Operations;
- The enclosure and control device serving the tank were installed and began operation prior to November 25, 1996; and
- The enclosure is designed and operated in accordance with the criteria for a permanent total enclosure as specified in ‘‘Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure’’ under 40 CFR 52.741, appendix B. The enclosure, however, may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical or electrical equipment; or to direct air flow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to ‘‘Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure’’ annually.

Step 14 40 CFR Part 264, Subpart CC, contains requirements for the various types of covers that may be used on HW tanks to control VO air emissions.

Note: For a facility subject to 40 CFR Part 264, Subpart CC that received a final permit under RCRA Section 3005 prior to December 6, 1996, the requirements of this subpart shall be incorporated into the permit when the permit is reissued in accordance with the requirements of 40 CFR 124.15 or reviewed in accordance with the requirements of 40 CFR 270.50(d). Until such date when the owner and operator receives a final permit incorporating the requirements, the owner and operator is subject to the requirements of 40 CFR Part 265, Subpart CC.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15
The Regional Administrator may require an owner/operator of a HW tank that has been exempted from 40 CFR 264.1084 through 264.1087 to perform a waste determination.
Proceed to Chapter 6.

Step 15 The Regional Administrator may at any time perform or request that the owner/operator perform a waste determination for a HW managed in a tank exempted from using air emission controls [40 CFR 264.1082(d)]. The waste determination for the average VO concentration of a HW at the "point of waste origination" shall be performed using direct measurement in accordance with the applicable requirements of 40 CFR 264.1083(a). The waste determination for a HW at the "point of waste treatment" shall be performed in accordance with the applicable requirements of 40 CFR 264.1083(b).

If the owner/operator is requested to perform the waste determination, the Regional Administrator may elect to have an authorized representative observe the collection of the HW samples used for the analysis.

If the results of the waste determination performed or requested by the Regional Administrator do not agree with the results of a waste determination performed by the owner/operator using knowledge of the waste, then the results of the waste determination performed in accordance with the requirements 40 CFR 264.1083(a) and/or (b) shall be used to establish compliance.

If the owner/operator has used an averaging period greater than 1 hour for determining the average VO concentration of a HW at the point of waste origination, the Regional Administrator may perform or request that the owner/operator perform a waste determination using direct measurement based on waste samples collected within a 1-hour period.

Results of the waste determination performed or requested by the Regional Administrator showing that the average VO concentration of the HW at the point of waste origination is equal to or greater than 500 ppmw shall constitute noncompliance with 40 CFR Part 264, Subpart CC. One exception is provided for those instances when normal operating process variations cause the average VO concentration of the HW (as determined by direct measurement for any given 1-hour period) to be equal to or greater than 500 ppmw. In such instances, information that was used by the owner/operator to determine the average VO concentration of the HW at the point of waste origination (e.g., test results, measurements, calculations, etc.) to be less than 500 ppmw [recorded in the facility records in compliance with 40 CFR 264.1083(a) and 40 CFR 264.1089] shall be considered by the Regional Administrator together with the results of the waste determination performed or requested by the Regional Administrator [40 CFR 264.1082(d)(iii)].

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5.3 Module B: General Organic Air Emission Control Requirements

5.3.1 Introduction

As described in the introduction to this chapter, the owner/operator of a HW tank must manage affected HW in accordance with tank standards that are separated into two levels--Tank Level 1 and Tank Level 2. Upon determining that a HW is subject to Subpart CC, control level applicability depends on the following: (1) the HW tank design capacity and the maximum organic vapor pressure (MOVP) of the HW being stored, (2) whether heat is applied to the HW, or (3) whether the tank is used for waste stabilization processes. Tank Level 2 controls specify that the owner/operator must install and operate one of the following:

- A fixed-roof tank equipped with an internal floating roof;
- A tank equipped with an external floating roof;
- A tank vented through a closed-vent system to a control device;
- A pressure tank; or
- A tank located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device.

In addition to being allowed to use Tank Level 2 controls, some owners/operators also can use Tank Level 1 controls. Tank Level 1 controls allow HW to be placed in tanks with a fixed roof that is equipped with closure devices that form a continuous barrier over the entire surface area of the HW being stored in the tank.

5.3.2 Milestones

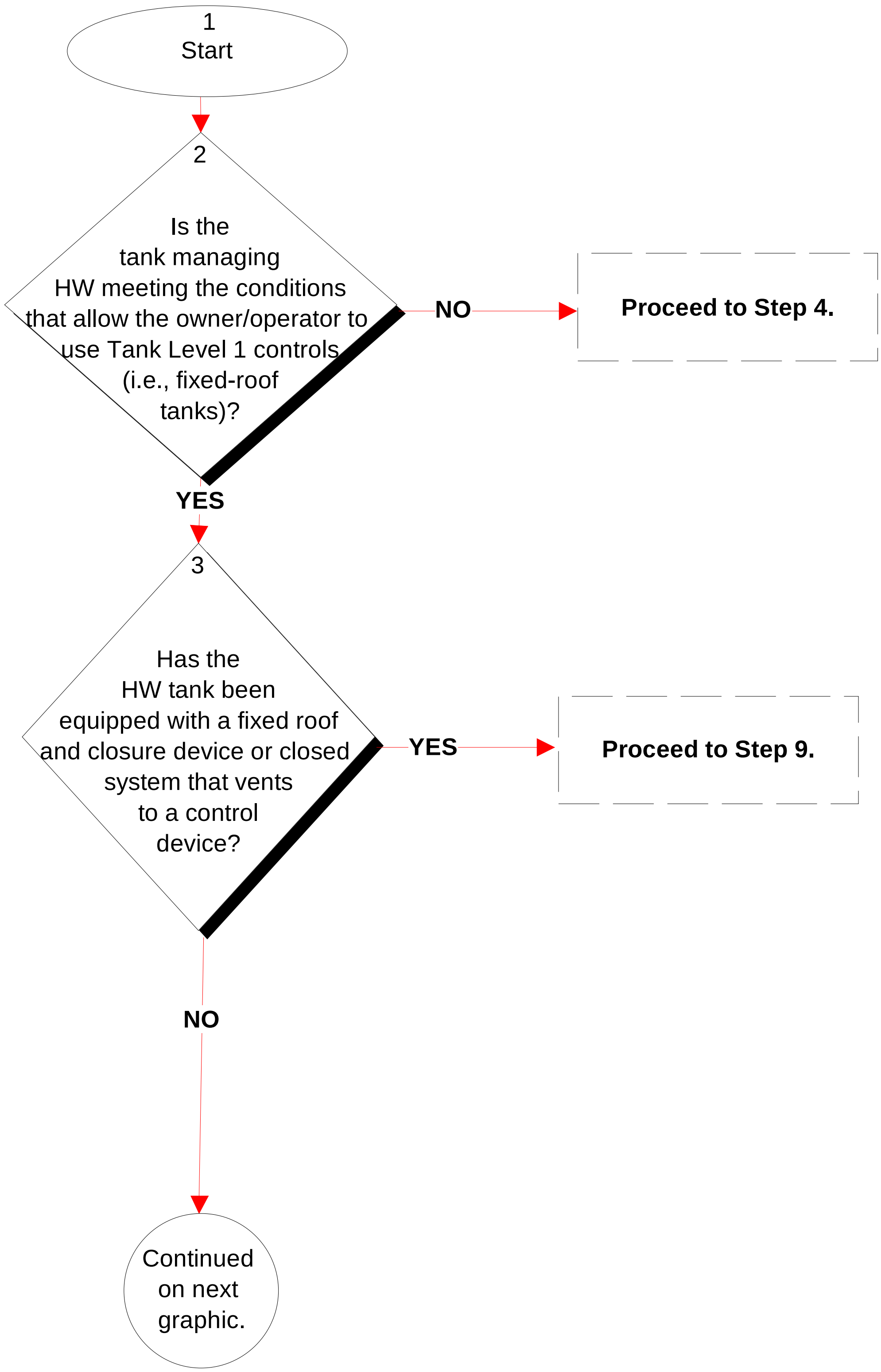
Has the owner/operator determined the applicable control level for the waste?

Before the first time a HW is placed in a tank, the owner/operator must determine whether the tank meets all of the following conditions:

- The tank's maximum organic vapor pressure is less than the tank's design capacity limit;
- hazardous waste in the tank is not heated; and
- the hazardous waste in the tank is not treated using waste stabilization.

An owner/operator whose tank meets all of the following conditions can elect to use either Tank Level 1 or Tank Level 2 controls. For tanks that do not meet all of the above conditions, owners/operators must control air emissions using Tank Level 2 controls.

Figure 5.2: General Organic Air Emission Control Requirements for HW Tanks



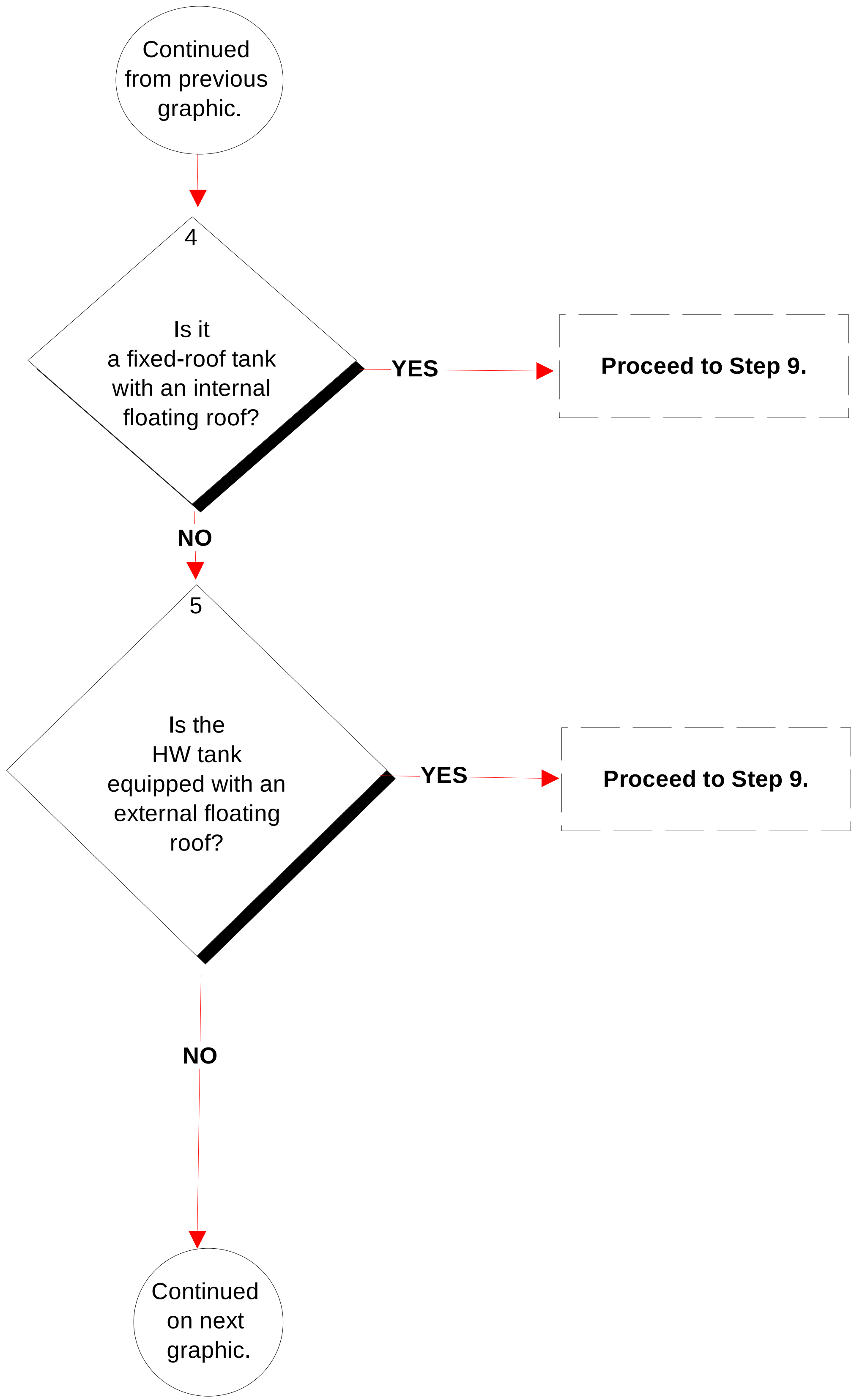
Step 1 Start.

Step 2 The owner/operator may place HW in a tank equipped with Tank Level 1 controls (e.g., a fixed roof) meeting the requirements specified in 40 CFR 264.1084(c) when the HW is determined to meet <u>all</u> of the following conditions:

- The maximum organic vapor pressure (MOVP) of the HW in the tank as determined using the procedure specified in 265.1084(c)(2) through (c)(4) is less than the following applicable value:
  - If the tank design capacity is equal to or greater than 151 m^3, then the maximum organic vapor pressure shall be less than 5.2 kPa;
  - If the tank design capacity is equal to or greater than 75 m^3 but less than 151 m^3, then the maximum organic vapor pressure shall be less than 27.6 kPa; or
  - If the tank design capacity is less than 75 m^3, then the maximum organic vapor pressure shall be less than 76.6 kPa;
- The HW in the tank is not heated by the owner/operator to a temperature that is greater than the temperature at which the MOVP of the HW was determined for the purpose of complying with the tank design capacity; and
- The HW in the tank is not treated by the owner or operator using a waste stabilization process, as defined in 40 CFR 265.1081.

Step 3 Tank Level 1 controls require the owner/operator to design, install, operate, and maintain a fixed roof and its closure devices such that they form a continuous barrier over the entire surface of the HW tank. Regardless of whether it is a separate cover installed on the tank or an integral part of the tank structural design, the fixed roof must be installed such that there are no open spaces (e.g., visible cracks, holes, gaps) between roof section joints or between the interface of the roof edge and the tank wall. Each opening in the fixed roof and any associated manifold system shall be (1) equipped with a closure device or (2) connected by a closed-vent system that is vented to a control device.

The *closure device* must be designed to operate such that when it is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the opening and the closure device. The *closed-vent system* must vent to a control device that removes or destroys organics in the vent stream whenever there is HW managed in the tank, except venting of the vapor headspace underneath the fixed roof to the control device is not required, opening of closure devices is allowed, and removal of the fixed roof is allowed during periods when it is necessary to provide access to the tank for routine inspection, maintenance, or other activities needed for normal operations, and for removal of accumulated sludge or other residues from the bottom of the tank [40 CFR 264.1084(c)].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4
Is it a fixed-roof tank with an internal floating roof?
YES
Proceed to Step 9.
NO
5
Is the HW tank equipped with an external floating roof?
YES
Proceed to Step 9.
NO
Continued on next graphic.

Step 4 A tank equipped with a fixed-roof tank and an internal floating roof must comply with 40 CFR 264.1084(e) requirements. This section requires that the internal floating roof shall be designed to float on the liquid surface except when it is supported by the leg supports. The internal floating roof shall be equipped with a continuous seal between the wall of the tank and the floating roof edge that meets either of the following:

- A single continuous seal that is either a liquid-mounted seal or a metallic shoe seal, as defined in 40 CFR 265.1081; or
- Two continuous seals mounted one above the other. The lower seal may be a vapor-mounted seal.

The internal floating roof also must meet prescribed specifications such as:

- Each opening in the internal floating roof shall be equipped with a gasketed cover or a gasketed lid except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains.
- Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

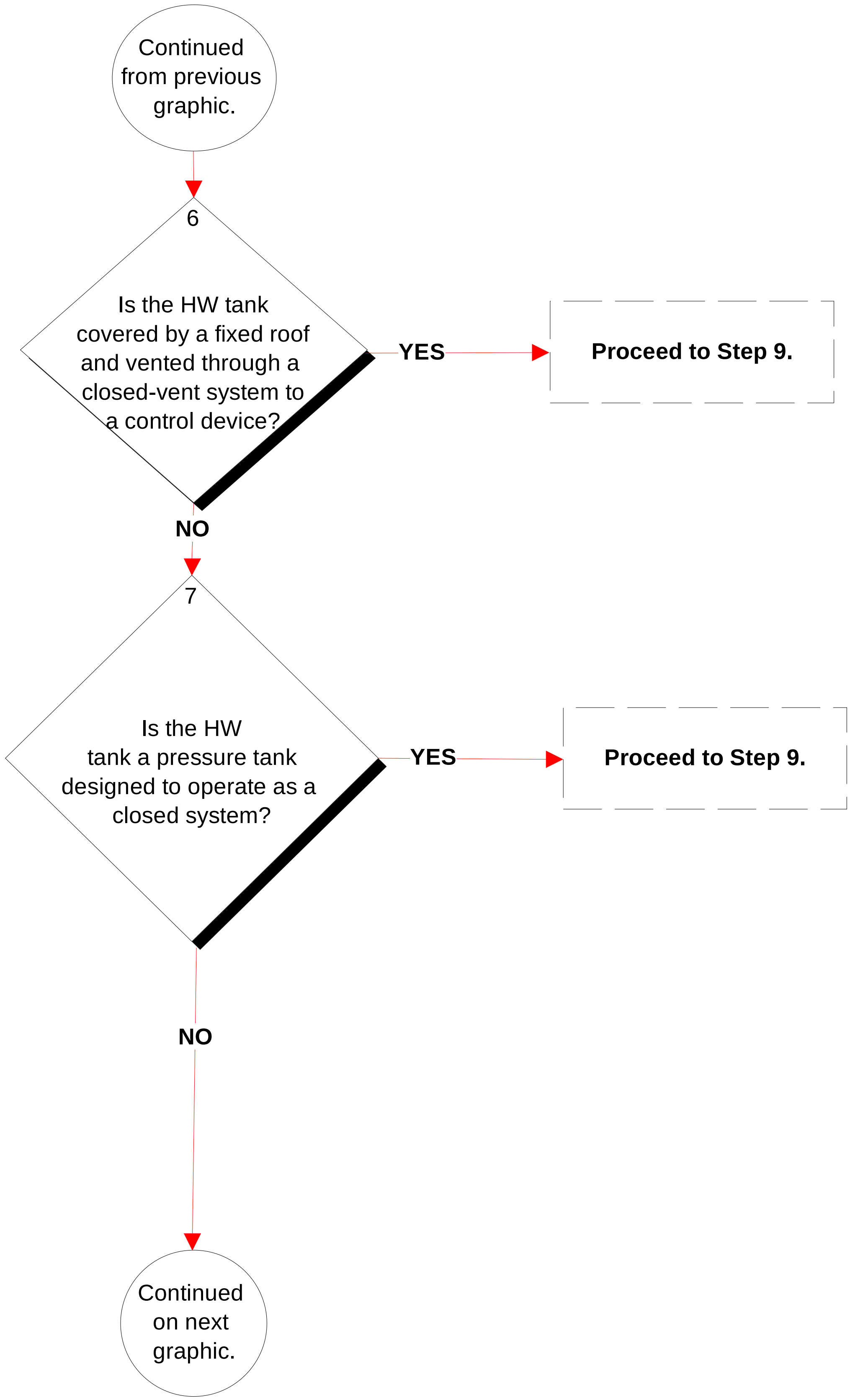
Finally, owners/operators must ensure certain operational requirements are fulfilled. These include the following types of requirements:

- When the floating roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be completed as soon as practical.
- Prior to filling the tank, each cover, access hatch, gauge float well or lid on any opening in the internal floating roof shall be bolted or fastened closed (i.e., no visible gaps).

Step 5 Owners/operators can control air pollutant emissions from a HW tank using an external floating roof, provided they meet the requirements specified in 40 CFR 264.1084(f). These provisions require the roof be designed to float on the liquid surface except when it is supported by the leg supports.

An external floating roof requires to two continuous seals between the wall of the tank and the roof edge. Lower ("primary") seals can be liquid-mounted seals or metallic shoe seals, as defined in 40 CFR 265.1081. Both the lower and the upper ("secondary") seals, which are mounted above the primary seals and cover the annular space between the floating roof and the wall of the tank, must meet certain parameters regarding the area and width of the gaps between the tank wall and the seals.

The external floating roof components such as automatic bleeder vents (vacuum breaker vents), rim space vents, roof drains, access hatches, gauge hatches, sample wells, gauge float wells, and unslotted and slotted guide pole wells must meet certain specifications (e.g., gasket and slotted membrane fabric covers, seals, lids). Similarly, operational requirements are prescribed and address the primary seal and the secondary seals; the process of filling, emptying, or refilling; and the need that openings and covers in the roof be bolted or fastened in a closed position at all times, except when the closure device must be open for access.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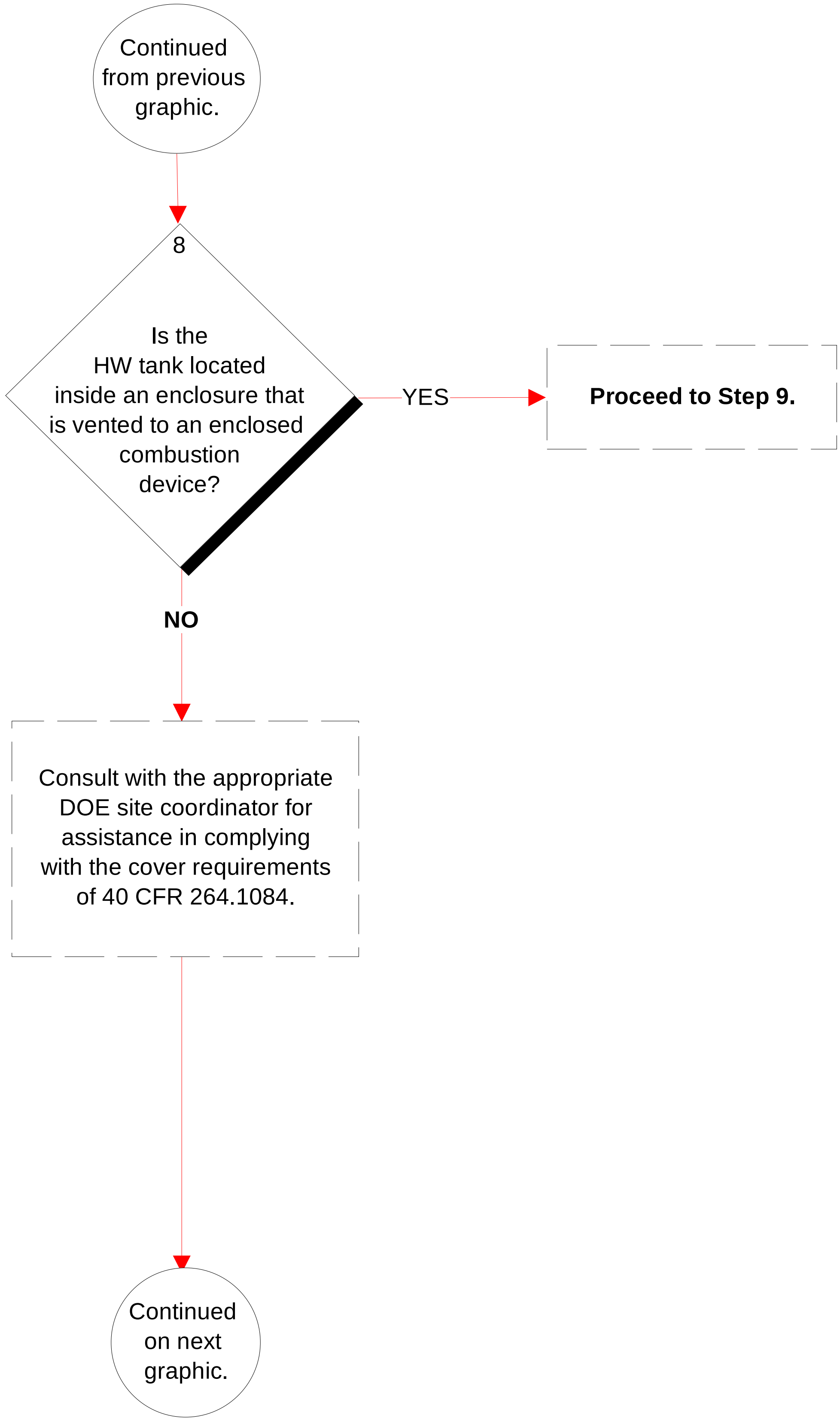
6
Is the HW tank covered by a fixed roof and vented through a closed-vent system to a control device?
YES
Proceed to Step 9.
NO
7
Is the HW tank a pressure tank designed to operate as a closed system?
YES
Proceed to Step 9.
NO
Continued on next graphic.

Step 6 Owners/operators that control air pollutant emissions from a HW tank by venting the tank to a control device shall meet the requirements specified in 40 CFR 264.1084(g). These require that the tank be covered by a fixed roof and vented directly through a closed-vent system to a control device in accordance with the following requirements:

- The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the liquid in the tank.
- Each opening in the fixed roof not vented to the control device shall be equipped with a closure device. If the pressure in the vapor headspace underneath the fixed roof is *less than* atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the fixed roof is *equal to or greater than* atmospheric pressure when the control device is operating, the closure device must be designed to operate with no detectable organic emissions.
- The fixed roof and its closure devices shall be made of suitable materials that minimize exposure of the HW to the atmosphere, to the extent practical, and maintain the integrity of the fixed roof and closure devices throughout their intended service life. Factors to be considered when selecting the materials for and designing the fixed roof and closure devices include:
  - organic vapor permeability, the effects of any contact with the liquid and its vapor managed in the tank;
  - the effects of outdoor exposure to wind, moisture, and sunlight; and
  - the operating practices used for the tank on which the fixed roof is installed.
- The closed-vent system and control device shall be designed and operated is discussed in Module 5C

Whenever a HW is in the tank, the fixed roof shall be installed with each closure device secured in the closed position and the vapor headspace underneath the fixed roof vented to the control device except (1) to provide access to the tank for performing routine inspection, maintenance, or other activities needed for normal operations, or (2) to remove accumulated sludge or other residues from the bottom of a tank. Opening of a safety device, as defined in 40 CFR 265.1081, is allowed at any time conditions require doing so to avoid an unsafe condition.

Step 7 A pressure tank shall be designed to operate as a closed system with "no detectable organic emissions" [determined in accordance with 40 CFR 264.1083(d)] at all times that HW is in the tank except when opening a safety device to avoid an unsafe condition (see Step 10 of this module) and when purging inerts from the tank, provided the purge stream is routed to a closed-vent system and control device. The HW tank must not vent to the atmosphere as a result of compression of the vapor headspace in the tank during filling of the tank to its design capacity and, therefore, all tank openings must be equipped with closure devices designed to operate with no detectable organic emissions.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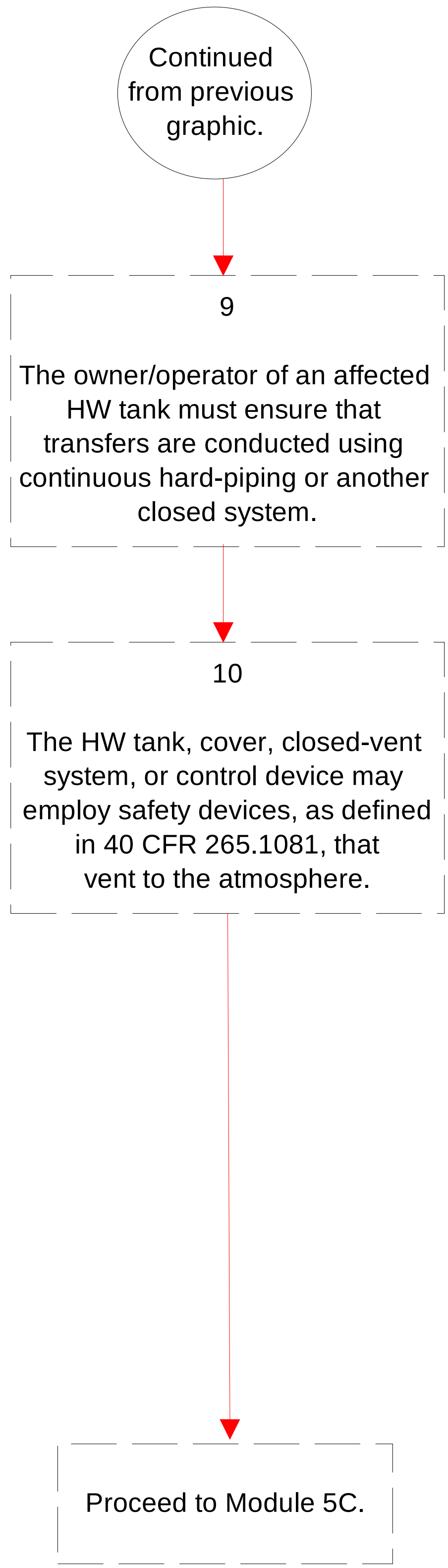
8
Is the HW tank located inside an enclosure that is vented to an enclosed combustion device?
YES
Proceed to Step 9.
NO
Consult with the appropriate DOE site coordinator for assistance in complying with the cover requirements of 40 CFR 264.1084.
Continued on next graphic.

Step 8 The HW tank must be located in an enclosure that is vented through a closed-vent system to an enclosed combustion control device that is designed and operated in accordance with the standards for either a vapor incinerator, boiler, or process heater, as specified for closed-vent systems and control devices (Chapter 5, Module C).

- The enclosure must be designed and operated in accordance with the criteria for a permanent total enclosure as specified in ‘‘Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure” under 40 CFR 52.741, appendix B.
- The owner or operator shall perform the verification procedure for the enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B ("Criteria T") initially when the enclosure is first installed and, thereafter, annually.
- Safety devices (as defined in Sec. 265.1081) may be installed and operated as necessary on any enclosure, closed-vent system, or control device.
- The owner or operator must inspect and monitor it as a closed-vent system and control device

Enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. For purposes of Criteria T, evaluations of permanent or temporary openings must be conducted on the enclosure as it is operated during hazardous waste management operations. Therefore, if the enclosure has a door that is closed during waste operations, then the open doorway would not be considered a natural draft openings (NDOs) under Criteria T; however, cracks or openings that exist around the door when it is closed would be considered NDO. Accordingly, any enclosure door (and other openings not accounted for as Criteria T NDO) must be closed at all times that hazardous waste is managed in the enclosed tank (unless the tank is exempt from Subpart CC air emission control requirements or when it is necessary to open the door or opening for waste transfer, equipment access, or worker access.


Continued from previous graphic.
9
The owner/operator of an affected HW tank must ensure that transfers are conducted using continuous hard-piping or another closed system.
10
The HW tank, cover, closed-vent system, or control device may employ safety devices, as defined in 40 CFR 265.1081, that vent to the atmosphere.
Proceed to Module 5C.

Step 9 The owner and operator shall ensure that transfers of affected HW (i.e., HW with an average VO concentration of equal to or greater than 500 ppmw) from another tank subject to Subpart CC or from a surface impoundment subject to 40 CFR 264.1085/265.1086 are conducted using continuous hard-piping or another closed system that does not allow exposure of the hazardous waste to the atmosphere. EPA considers a drain system that meets the requirements of 40 CFR part 63, Subpart RR (National Emission Standards for Individual Drain Systems) to be a "closed system." See Appendix F for these requirements.

Transfer requirements do not apply to those HWs that meet the conditions specified in 40 CFR 264.1082(c)/265.1083(c) (as previously described in Module 5A) including:

- HW that meets the average VO concentration conditions at the point of waste origination;
- HW that has been treated by an organic destruction or removal process: or
- HW that meets all applicable numerical or technology-based LDR treatment standards.

Also, transfers of HW between tanks and containers are not required to be accomplished in a closed system.

Step 10 One or more safety devices (e.g., pressure relief valves, frangible discs, fusible plugs) which vent directly to the atmosphere may be used on the tank, cover, closed-vent system, or control device provided the safety device meets the following conditions:

- The safety device is not used for routine venting of gases or vapors from the vapor headspace underneath a cover such as during filling of the unit or to adjust the pressure in this vapor headspace in response to normal daily diurnal ambient temperature fluctuations; and
- The safety device remains in a closed, sealed position at all times except when (1) the internal pressure or a relevant parameter exceeds the device threshold setting applicable to the air emission control equipment as determined by the owner or operator based on manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials; or (2) unsafe conditions resulting from an unplanned, accidental, or emergency event require that the device open for the purpose of preventing physical damage or permanent deformation of the unit or its air emission control equipment. An example of an unplanned event is a sudden power outage.

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5.4 Module C: Requirements for Closed-vent Systems and Control Devices

5.4.1 Introduction

Closed-vent systems are those systems which are not open to the atmosphere and that are composed of piping, connections, and if necessary, flow inducing devices that transport vapor or gas from a piece or pieces of equipment to a control device.

To comply with the requirements of Subpart CC, a control device shall be one of the following:

- A control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95% by weight; or
- An enclosed combustion device designed and operated in accordance with the requirements of 40 CFR 264.1033(c); or
- A flare designed and operated in accordance with the requirements of 40 CFR 264.1033(d).
- A control device operated and maintained in compliance with 40 CFR 264.1033(j).

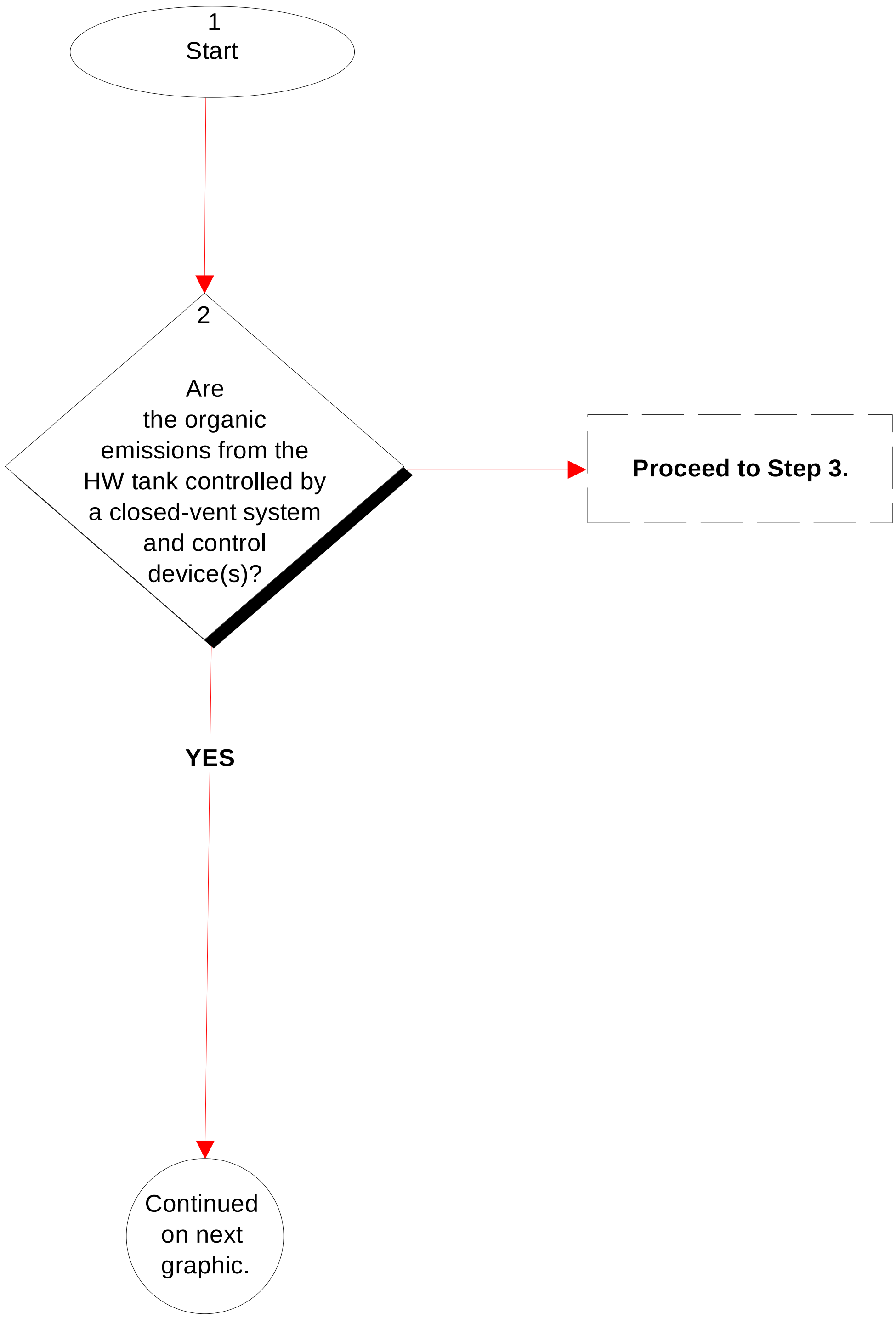
The control device must be operating at all times when gases, vapors, and/or fumes are vented from the HW management unit through the closed-vent system to the control device. The owner/operator must ensure gases, vapors, and/or fumes are not actively vented to the control device during periods of planned routine maintenance (limited to 240 hours per year) or system malfunction (i.e., periods when the control device is not operating or not operating normally) except in cases when it is necessary to vent the gases, vapors, or fumes to avoid an unsafe condition or to implement malfunction corrective actions or planned maintenance actions.

5.4.2 Milestones

Has the owner/operator chosen to use a control device other than one described in 40 CFR 264.1087(c)(1)?

- An owner/operator may use a device other than a flare, thermal vapor incinerator, boiler, process heater, condenser, or carbon adsorption system if the device is operated in accordance with 40 CFR 264.1033(j).

Figure 5.3: Requirements for Closed-vent Systems and Control Devices

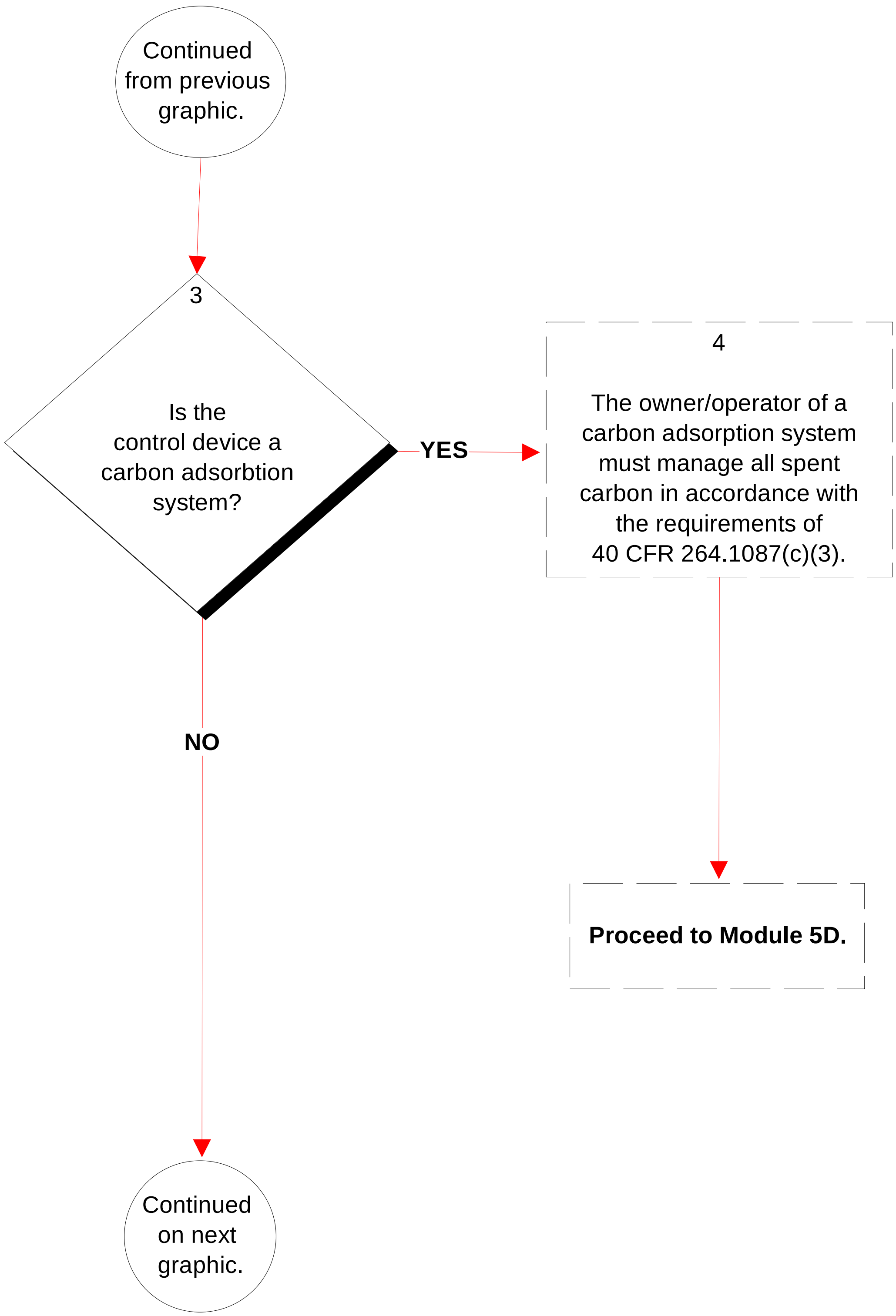


Step 1 Start.

Step 2 The closed-vent system shall meet the following requirements:

- The closed-vent system shall route the gases, vapors, and fumes emitted from the HW in the tank to a control device;
- The closed-vent system shall be designed and operated in accordance with the requirements specified in 40 CFR 264.1033(k); and
- If the closed-vent system contains one or more bypass devices that could be used to divert all or a portion of the gases, vapors, and/or fumes and prevent their entering the control device, the owner/operator shall meet the following requirements:
  - For each bypass device which, for the purposes of this regulation, does not include low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, spring loaded pressure relief valves, and other safety device fittings, the owner/operator shall either:
    - (a) Install, calibrate, maintain, and operate a flow indicator (i.e., a device which indicates the presence of either gas or vapor flow in the bypass line) at the inlet to the bypass line used to divert gases and vapors from the closed-vent system to the atmosphere at a point upstream of the control device inlet; or
    - (b) Secure the bypass device control mechanism (e.g., valve handle, damper lever) in the closed position using a seal or locking device (e.g., car-seal; lock-and-key configuration valve) such that the bypass device cannot be opened without breaking the seal or removing the lock. Seals or closure mechanisms must shall be visually inspect at least once every month to verify that the valve is maintained in the closed position; and
  - The control device shall be one of the following devices:
    - (a) A control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent by weight;
    - (b) An enclosed combustion device designed and operated in accordance with the requirements of 40 CFR 264.1033(c); or
    - (c) A flare designed and operated in accordance with the requirements of 40 CFR 264.1033(d).
    - (d) A control device other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system provided it is operated and maintained in accordance with the requirements of 40 CFR 264.1033(j).

The control device must be operating at all times when gases, vapors, and/or fumes are vented from the HW management unit through the closed-vent system to the control device except in cases when it is necessary to vent the gases, vapors, or fumes to avoid an unsafe condition or to implement malfunction corrective actions or planned routine maintenance actions (limited to 240 hours per year).
[40 CFR 264.1087(c)(1), (2), & (4)]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3
Is the control device a carbon adsorbtion system?
YES
4
The owner/operator of a carbon adsorption system must manage all spent carbon in accordance with the requirements of 40 CFR 264.1087(c)(3).
Proceed to Module 5D.
NO
Continued on next graphic.

Step 3 A carbon adsorption system is a control device that uses activated carbon to adsorb volatile organic compounds (VOCs) from a gas stream. Captured VOCs are later recovered from the carbon.

Step 4 The owner/operator using a carbon adsorption system to reduce the total organic content of the inlet vapor stream vented to the carbon adsorption system by at least 95% by weight shall operate and maintain the control device in accordance with the following requirements:

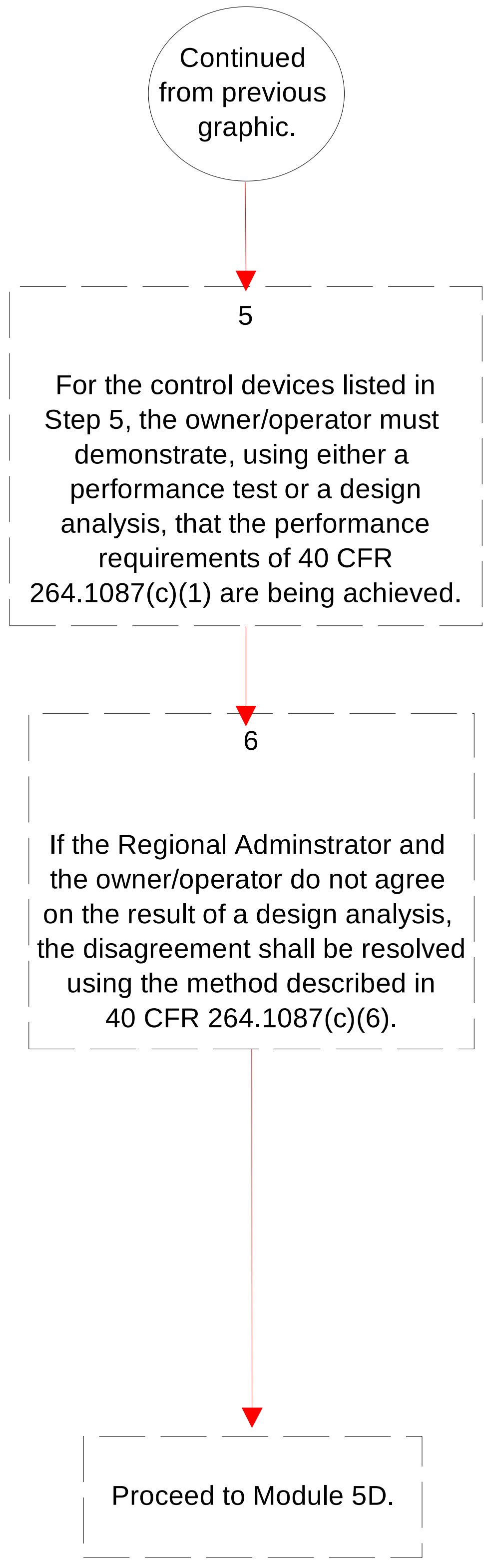
- Following the initial startup of the control device, all activated carbon in the control device shall be replaced with fresh carbon on a regular basis in accordance with the requirements of 40 CFR 264.1033(g) or 40 CFR 264.1033(h); and
- All carbon that is a HW and is removed from the control device, regardless of the average VO concentration of the carbon, shall be managed in accordance with the requirements of 40 CFR 264.1033(n).

[40 CFR 264.1087(c)(3)]

The owner/operator shall also demonstrate that a carbon adsorption system achieves 95% by weight reduction of the total organic content based on the total quantity of organics vented to the atmosphere from all carbon adsorption system equipment that is used for organic adsorption, organic desorption or carbon regeneration, organic recovery, or carbon disposal.

[40 CFR 264.1087(c)(5)(v)]

Figure 5.3: Requirements for Closed-vent Systems and Control Devices - continued



Step 5 An owner/operator must conduct either a performance test or a design analysis for all control devices, except for the following:

- A flare;
- A boiler or process heater with a design heat input capacity of 44 megawatts or greater;
- A boiler or process heater into which the vent stream is introduced with the primary fuel;
- A boiler or industrial furnace burning HW for which the owner/operator has been issued a final permit under 40 CFR Part 270 and designed and operates the unit in accordance with the requirements of 40 CFR Part 266, Subpart H (Hazardous Waste Burned in Boilers and Industrial Furnaces); or
- A boiler or industrial furnace burning HW for which the owner/operator has designed and operates in accordance with the interim status requirements of 40 CFR Part 266, Subpart H.

An owner/operator shall demonstrate the performance of each flare in accordance with the requirements specified in 40 CFR 264.1033(e). Performance tests on any control device not mentioned above shall be conducted using the test methods and procedures specified in 40 CFR 264.1034(c)(1) through (c)(4).

For a design analysis conducted on any control device not listed above the design analysis shall meet the requirements specified in 40 CFR 264.1035(b)(4)(iii).

Step 6 If the owner/operator and the Regional Administrator do not agree on a demonstration of control device performance using a design analysis, then the disagreement shall be resolved using the results of a performance test performed by the owner/operator in accordance with the requirements of 40 CFR 264.1034 (c)(1) through (c)(4). The Regional Administrator may choose to have an authorized representative observe the performance test.

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5.5 Module D: Inspection and Monitoring Requirements

5.5.1 Introduction

Under Subpart CC, owners or operators must develop and implement a written plan and schedule to inspect and monitor HW tank air emission control equipment. This plan and schedule must be incorporated into the facility inspection plan required under 40 CFR 264.15, which requires that inspection results be recorded in an inspection log or summary that is maintained for three years from the date of inspection.

Both HW Tank Level 1 and Tank Level 2 air emission control equipment, including closed-vent systems and control devices, must be inspected by the owner or operator to check for defects that could result in air pollutant emissions [40 CFR 264.1088(a)]. Defects include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. Inspection procedures may be tank/control-specific. In some cases (e.g., internal floating roof components), owners/operators are required to notify the regulators in advance of each inspection to provide them with the opportunity to have an observer present during the inspection.

Generally, initial inspections should be performed on or before the date that the HW tank is scheduled to receive HW that subjects it to Subpart CC requirements. Thereafter, inspections should be performed at least once every year unless (1) the owner/operator has designated a cover as an "unsafe to inspect and monitor cover" and inspects the unit as frequently as practicable, or (2) a tank is buried partially or entirely underground. Defects detected during an inspection must be repaired as soon as possible, but no later than 45 calender days after detection.

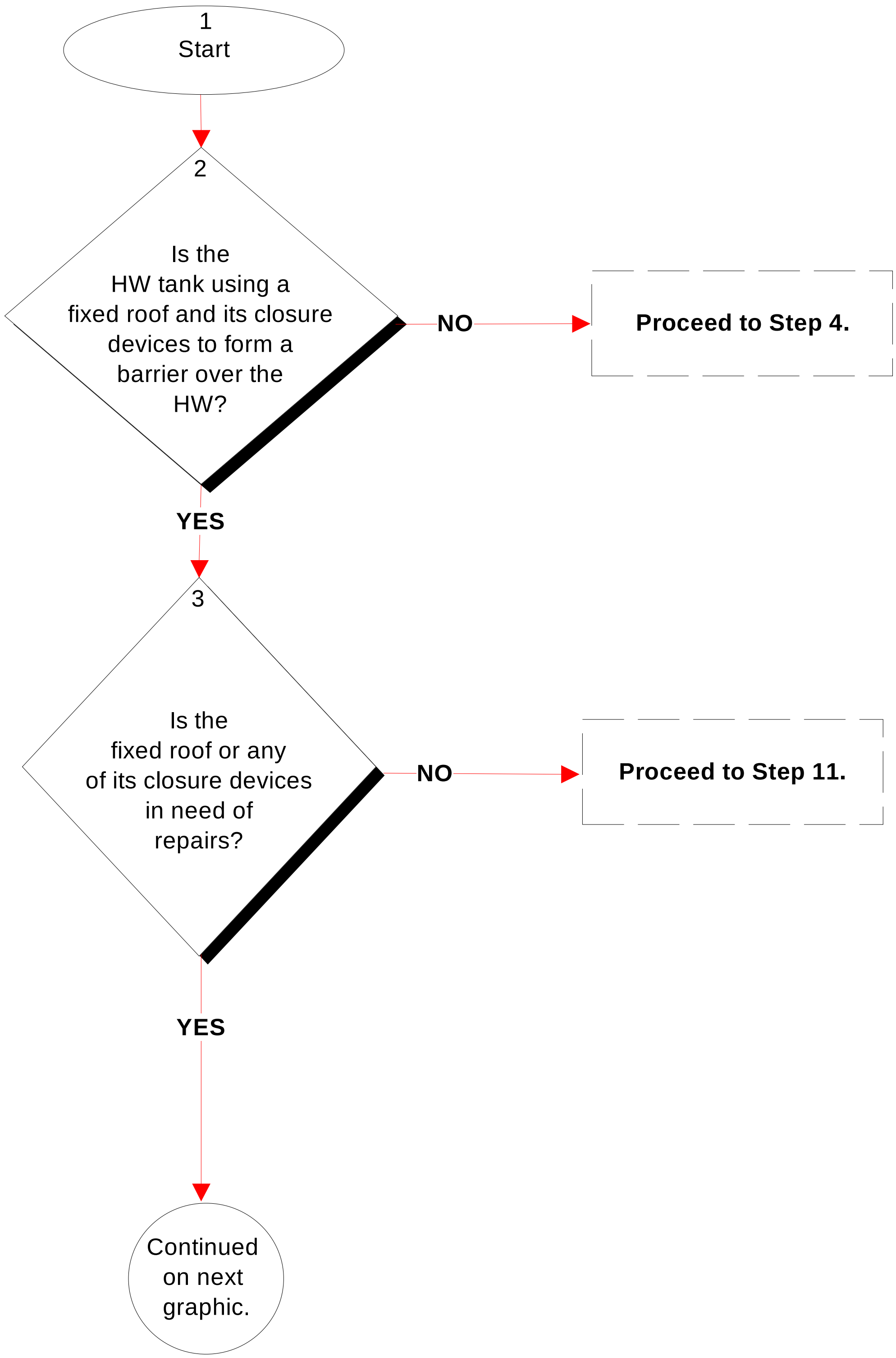
5.5.2 Milestones

Has the owner/operator developed/implemented a written inspection program for all affected HW tank covers and closure devices?

All regulated HW tank covers and closure devices must be monitored and inspected to ensure they are maintained in a closed position unless:

- Performing routine inspection, maintenance, or other activities needed for normal operations (e.g., open a port to sample the liquid in the tank);
- Removing accumulated sludge or other residues from the tank bottom;
- Opening of a some type of pressure relief device (e.g., conservation vent); or
- Opening of a "safety device" to avoid an unsafe condition.

Figure 5.4: Inspection and Monitoring Requirements



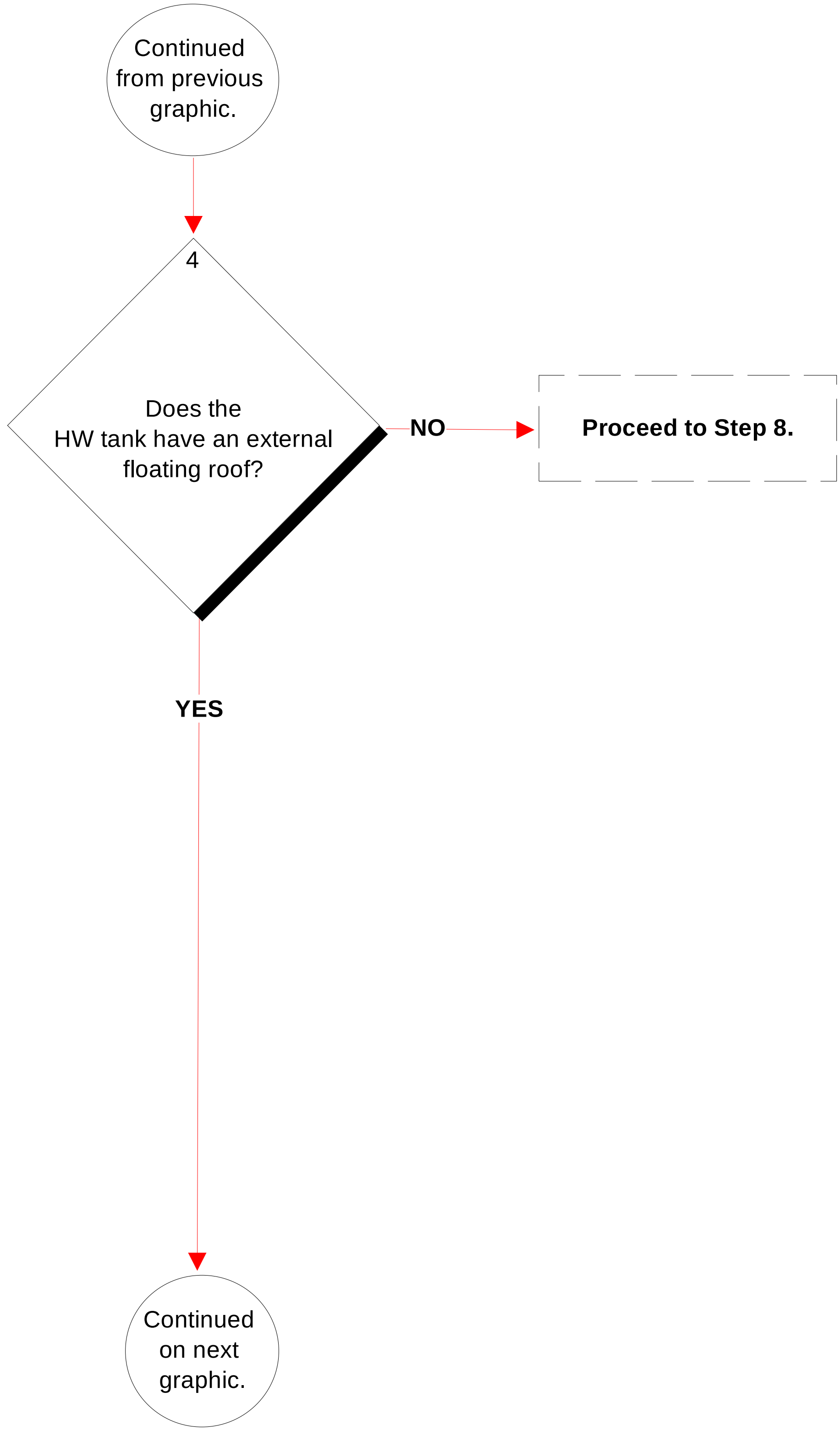
Step 1 Start.

Step 2 Owners/operators of HW tanks that are (1) used to manage HW meeting the design capacity/maximum organic vapor pressure (MOVP) conditions [Module 5.B, Step 2], (2) not heating the HW, and (3) not being used for waste stabilization processes can choose to control organic air emissions using either Tank Level 1 or Tank Level 2 controls. Determining the MOVP for HWs to be managed using Tank Level 1 controls, however, must occur before the first time the HW is placed in the tank and, thereafter, whenever changes to the HW could potentially cause the MOVP to increase to a level that equals or exceeds tank design capacity category limit.
[40 CFR 264.1084(c)(1)]

To comply with Tank Level 1 conditions, owners/operators can use a fixed roof and closure devices form a continuous barrier over the entire surface area of the HW in the tank. On or before the date that the tank begins managing affected HW (i.e., becomes subject to Subpart CC) and annually thereafter, owners/operators using Tank Level 1 controls shall visually inspect the fixed roof and its closure devices to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. Subsequent inspections shall be performed at least once every year except under the special conditions discussed in Steps 11 and 12. The owner/operator shall maintain a record of the inspection as described Chapter 5, Module E.
[40 CFR 264.1084(c)(4)]

Step 3 In the event that a defect is detected, the owner or operator shall repair each defect detected during an inspection as follows:

- The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection, and repair shall be completed as soon as possible but no later than 45 calendar days after detection.
- Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation.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4
Does the HW tank have an external floating roof?
NO
Proceed to Step 8.
YES
Continued on next graphic.

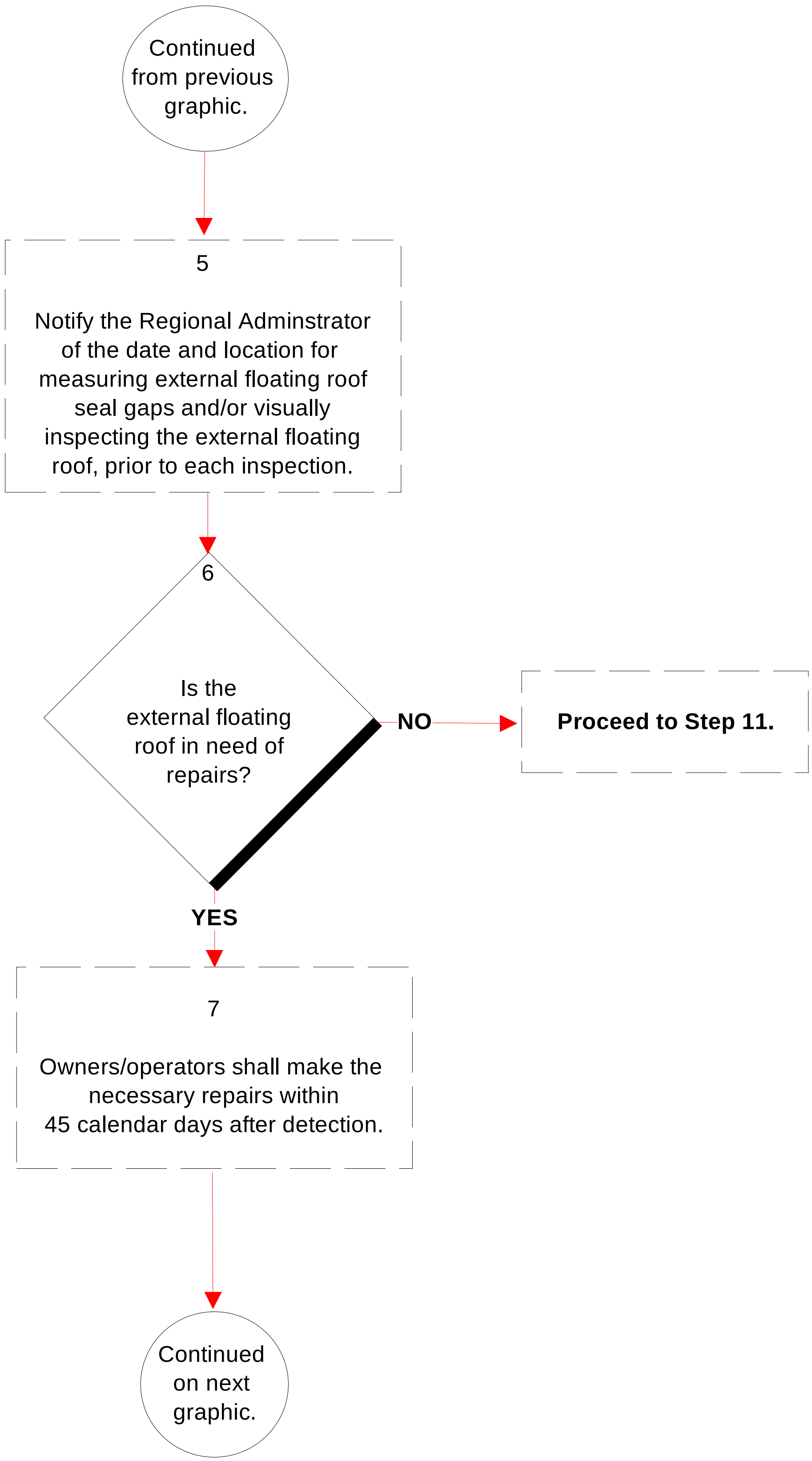
Step 4 After installation, the owner/operator of a tank with an external floating roof shall visually inspect the external floating roof and its closure devices to check for defects that could result in air pollutant emissions. Defects include, but are not limited to: Holes, tears, or other openings in the rim seal or seal fabric of the floating roof; a rim seal detached from the floating roof; all or a portion of the floating roof deck being submerged below the surface of the liquid in the tank; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. The owner or operator shall perform an initial inspection of the external floating roof and its closure devices on or before the date that the tank becomes subject to Subpart CC provisions. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in Steps 11 and 12.

The owner or operator shall measure gaps between the tank wall and the <u>primary</u> seal within 60 calendar days after initial operation of the tank following installation of the floating roof and, thereafter, at least once every 5 years. Gaps between the tank wall and the <u>secondary</u> seal shall likewise be measured within 60 calendar days after initial operation and, thereafter, at least once every year. [NOTE: If a tank ceases to hold hazardous waste for a period of 1 year or more, subsequent introduction of hazardous waste into the tank shall be considered an initial operation for the purposes of these paragraphs]. Total surface area of gaps in the primary seal and in the secondary seal shall be determined individually using the following procedure:

- The seal gap measurements shall be performed at one or more floating roof levels when the roof is floating off the roof supports.
- Seal gaps, if any, shall be measured around the entire perimeter of the floating roof in each place where a 0.32-centimeter (cm) diameter uniform probe passes freely (without forcing or binding against the seal) between the seal and the wall of the tank and measure the circumferential distance of each such location.

The gap surface area shall be determined using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance. The total gap area shall be calculated by adding the gap surface areas determined for each identified gap location for the primary seal and the secondary seal individually, and then dividing the sum for each seal type by the nominal diameter of the tank. These total gap areas for the primary seal and secondary seal are then compared to the respective standards for the seal type.

[40 CFR 264.1084(f)(3)]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5
Notify the Regional Adminstrator of the date and location for measuring external floating roof seal gaps and/or visually inspecting the external floating roof, prior to each inspection.
6
Is the external floating roof in need of repairs?
NO
Proceed to Step 11.
YES
7
Owners/operators shall make the necessary repairs within 45 calendar days after detection.
Continued on next graphic.

Step 5 The owner or operator shall notify the Regional Administrator in advance of each inspection required by Step 4 to afford the Regional Administrator the opportunity to have an observer present during the inspection. The owner or operator shall notify the Regional Administrator of the date and location of the inspection as follows:

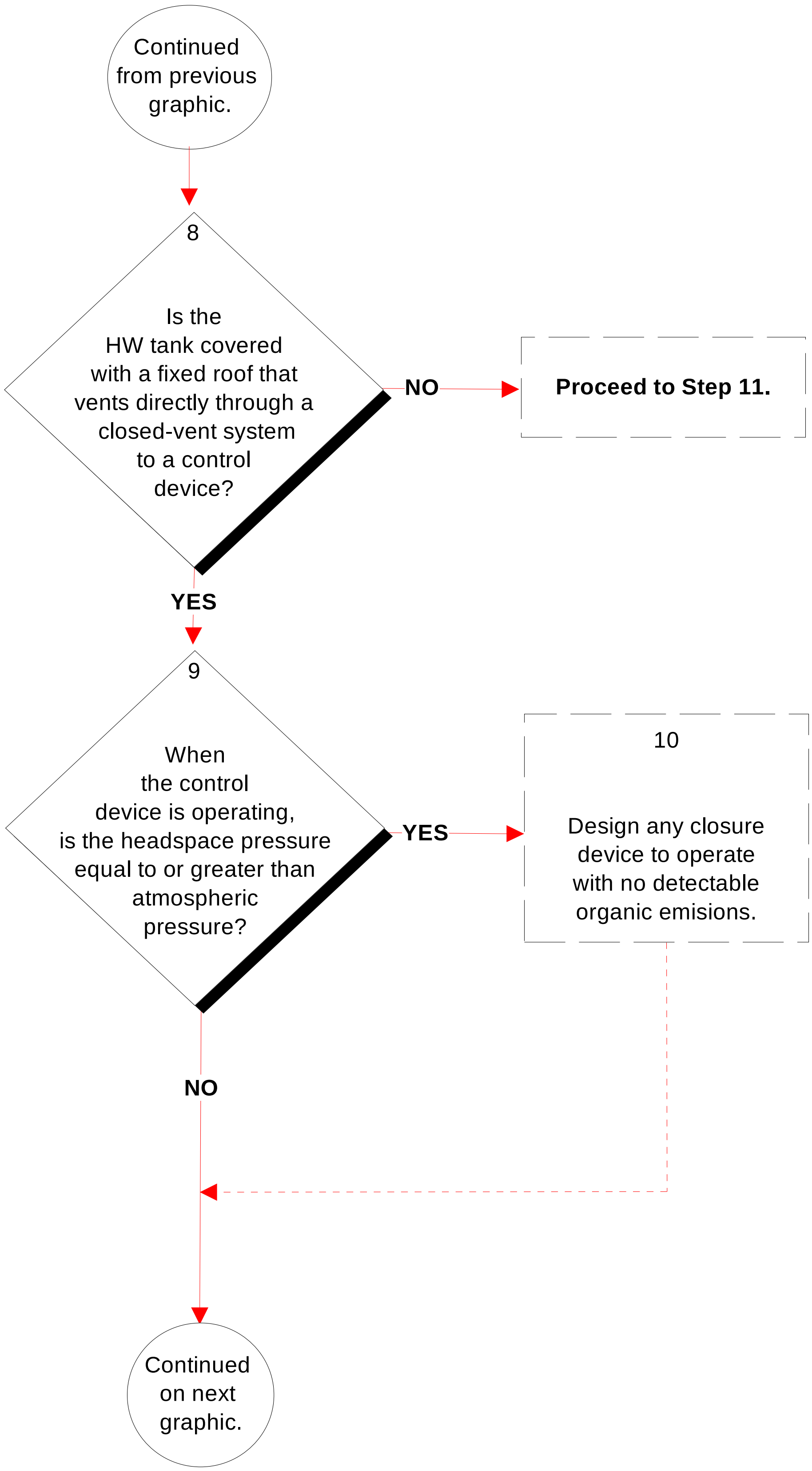
- Prior to each inspection to measure external floating roof seal, written notification shall be prepared and sent by the owner or operator so that it is received by the Regional Administrator at least 30 calendar days before the date the measurements are scheduled to be performed.
- Prior to each visual inspection of an external floating roof in a tank that has been emptied and degassed, written notification shall be prepared and sent by the owner or operator so that it is received by the Regional Administrator at least 30 calendar days before refilling the tank, unless an inspection is not planned.

When a visual inspection is not planned and the owner or operator could not have known about the inspection 30 calendar days before refilling the tank, the owner or operator shall notify the Regional Administrator as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the Regional Administrator at least 7 calendar days before refilling the tank. [40 CFR 264.1084(f)(3)(iii)]

Step 6 The owner or operator shall make first efforts at the necessary repairs no later than 5 calendar days after detection if any inspection identifies a defect or if seal gap measurements indicate that total gap areas do not conform to the following specifications:

- The total area of the gaps between the tank wall and the primary liquid-mounted or metallic shoe seal shall not exceed 212 square centimeters (cm^2) per meter of tank diameter, and the width of any portion of any gap shall not exceed 3.8 cm. For metallic shoe seals, one end shall extend into the liquid in the tank and the other end shall extend a vertical distance of at least 61 cm above the liquid surface; and
- The secondary seal shall be mounted above the primary seal and cover the annular space between the floating roof and the wall of the tank such that the total area of the gaps between the tank wall and the secondary seal shall not exceed 21.2 cm^2 per meter of tank diameter, and the width of any portion of these gaps shall not exceed 1.3 cm.

Step 7 The owner or operator shall make repairs as soon as possible, but no later than 45 calendar days after detecting a failure, defect, or nonconforming gap area during inspections required in Step 4. Repair of a defect or failure may be delayed <u>beyond</u> 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed <u>before</u> the process or unit resumes operation.
[40 CFR 264.1084(k)(2)]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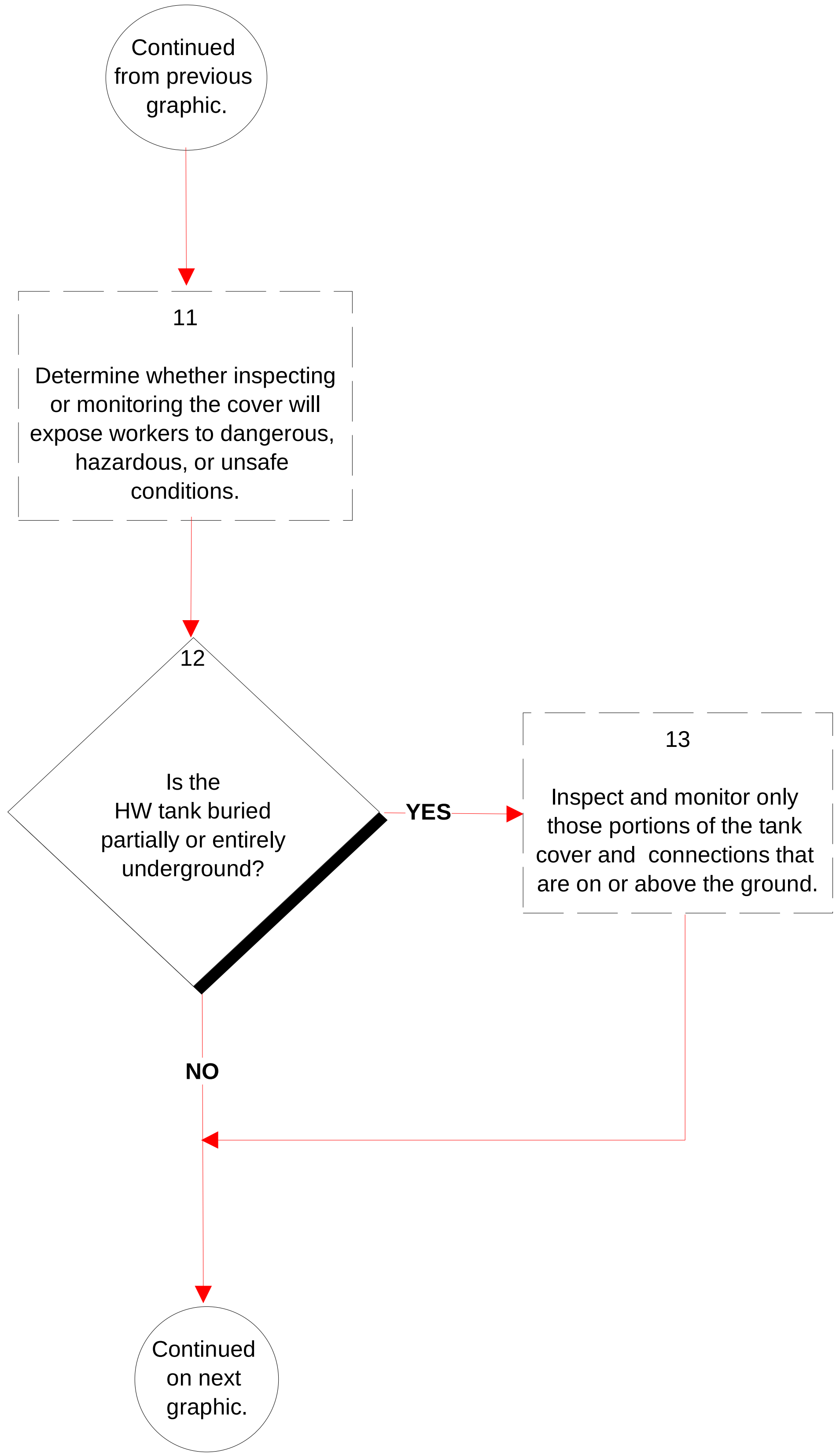
8
Is the HW tank covered with a fixed roof that vents directly through a closed-vent system to a control device?
NO
Proceed to Step 11.
YES
9
When the control device is operating, is the headspace pressure equal to or greater than atmospheric pressure?
YES
10
Design any closure device to operate with no detectable organic emisions.
NO
Continued on next graphic.

Step 8 Owners or operators shall perform an initial inspection of the air emission control equipment on or before the date that the tank becomes subject to Subpart CC. Thereafter, inspections shall be performed at least once every year except for the special conditions provided for in Steps 11 and 12. Visual inspections of the fixed roof tank and its closure devices shall check for defects that could result in air pollutant emissions and shall be conducted as described in Step 2 of this module. Furthermore, owners/operators of tanks that are covered by a fixed roof and who control air pollutant emissions by venting directly through a closed-vent system to a closure device must inspect and monitor the closed-vent system and control device as specified in Steps 15 -18.

Step 9 If the pressure in the vapor headspace underneath the fixed roof is less than atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the fixed roof is equal to or greater than atmospheric pressure when the control device is operating, the closure device shall be designed to operate with no detectable organic emissions.

Step 10 When the pressure in the vapor headspace underneath the fixed roof is equal to or greater than atmospheric pressure when the control device is operating, owners/operators will need to test each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices to ensure that the tank is designed and operates with no detectable emissions. Potential leak interfaces that are associated with covers and closure devices include, but are not limited to: The interface of the cover and its foundation mounting; the periphery of any opening on the cover and its associated closure device; and the sealing seat interface on a spring-loaded pressure relief valve. [Also see Step 24.]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11
Determine whether inspecting or monitoring the cover will expose workers to dangerous, hazardous, or unsafe conditions.
12
Is the HW tank buried partially or entirely underground?
YES
13
Inspect and monitor only those portions of the tank cover and connections that are on or above the ground.
NO
Continued on next graphic.

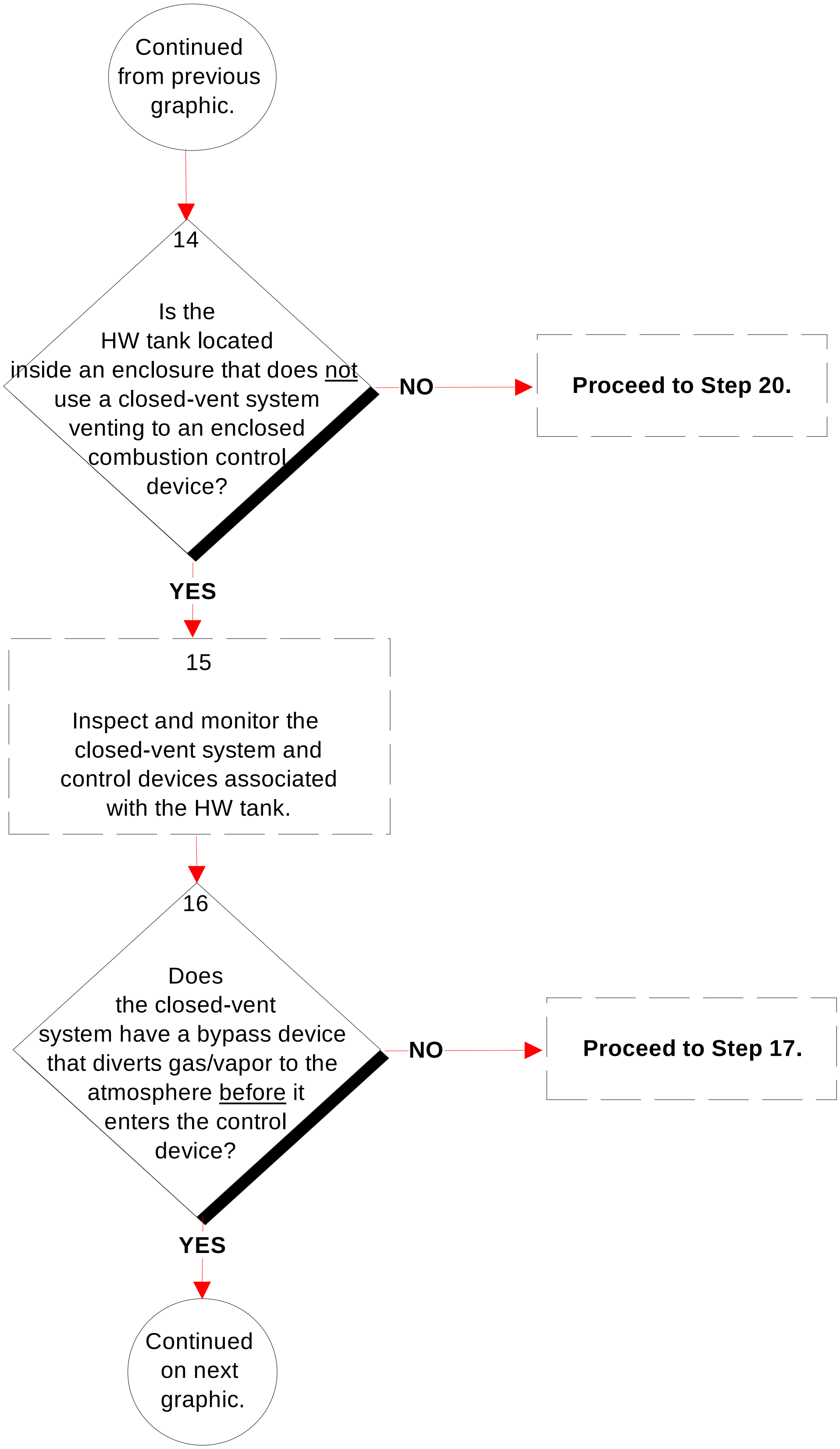
Step 11 Following the initial inspection and monitoring of the cover, subsequent inspection and monitoring may be performed at intervals longer than 1 year provided the owner/operator designates a cover as an "unsafe to inspect and monitor" because all of the following conditions are met:

- The owner/operator determines that inspection or monitoring of the cover would expose a worker to dangerous, hazardous, or other unsafe conditions;
- The owner/operator prepares a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor, if required; and
- The owner/operator develops and implements a written plan and schedule to inspect and monitor the cover using the procedures specified in this module as frequently as practicable during those times when a worker can safely access the cover.

[40 CFR 264.1084(l)(1)]

Step 12 Following initial inspection and monitoring of the cover, subsequent inspections and monitoring may be performed at intervals longer than 1 year when a tank is buried partially or entirely underground.

Step 13 The owner/operator is required to perform the cover inspection and monitoring requirements only for those portions of the tank cover and any connections to the tank (e.g., fill ports, access hatches, gauge wells, etc.) that are located on or above the ground surface. [40 CFR 264.1084(l)(2)]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14
Is the HW tank located inside an enclosure that does not use a closed-vent system venting to an enclosed combustion control device?
NO
Proceed to Step 20.
YES
15
Inspect and monitor the closed-vent system and control devices associated with the HW tank.
16
Does the closed-vent system have a bypass device that diverts gas/vapor to the atmosphere before it enters the control device?
NO
Proceed to Step 17.
YES
Continued on next graphic.

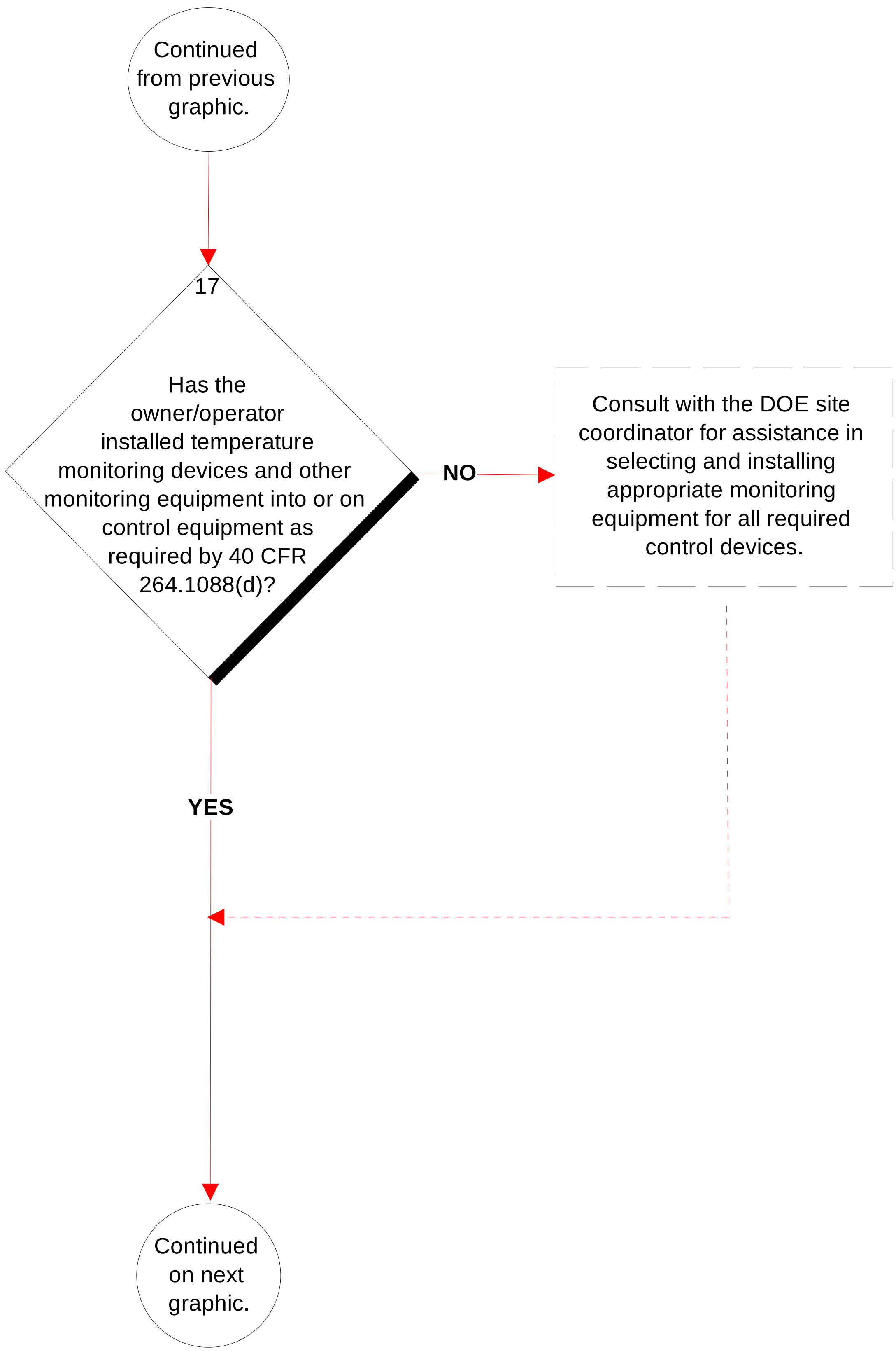
Step 14 As with other Subpart CC controls that use closed-vent systems (e.g., fixed roofs), owners/operators who control air pollutant emissions from Level 2 tanks by venting enclosure emissions through a closed-vent system to an enclosed combustion control device (i.e., vapor incinerator, boiler, or process heater) must inspect and monitor the closed-vent system and control device as specified in Steps 15 - 18.

Step 15 Closed-vent systems shall be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified as 40 CFR 264.1034(b). [NOTE: 40 CFR 264.1034(b) states that when a closed-vent system is tested for compliance with no detectable emissions, Reference Method 21 in 40 CFR Part 60 shall be used. The detection instrument shall also meet the performance criteria of Reference Method 21.]

Closed-vent systems shall be monitored to determine compliance with this section during the initial leak detection monitoring, which shall be conducted by the date that the facility becomes subject to the provisions of this section, annually, and at other times as requested by the Regional Administrator. For the annual leak detection monitoring after the initial leak detection monitoring, the owner/operator is not required to monitor those closed-vent system components which operate in vacuum service, or those closed-vent system joints, seams, or other connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of metal pipe or a bolted and gasketed pipe flange).

Detectable emissions, as indicated by an instrument reading greater than 500 ppm and visual inspections, shall be controlled as soon as practicable, but not later than 15 calendar days after the emission is detected. A first attempt at repair shall be made no later than 5 calendar days after the emission is detected. Closed vent systems and control devices shall be operated at all times when emissions may be vented to them.

Step 16 When the closed-vent system includes bypass devices that could be used to divert the gas or vapor stream to the atmosphere before entering the control device, each bypass device shall be equipped with either a flow indicator or a seal or locking device (e.g., car-seal or a lock-and-key configuration valve). If a seal or locking device is used, the owner or operator must visually inspect the seal or closure mechanism at least once every month to verify that the bypass mechanism is maintained in the closed position.
[40 CFR 264.1087(b)(3)(ii)].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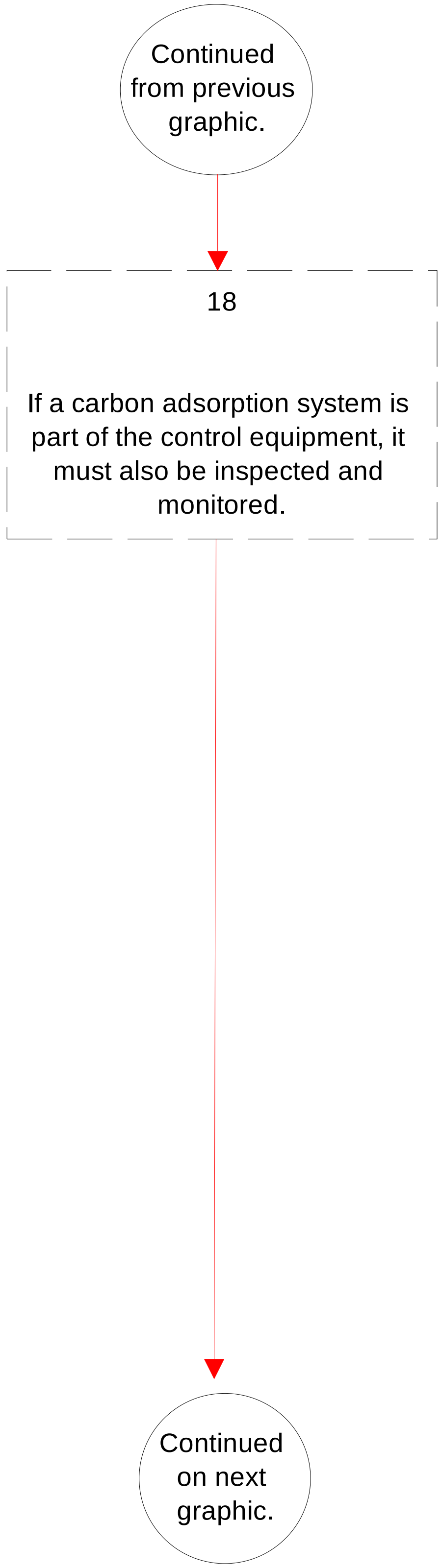
17
Has the owner/operator installed temperature monitoring devices and other monitoring equipment into or on control equipment as required by 40 CFR 264.1088(d)?
NO
Consult with the DOE site coordinator for assistance in selecting and installing appropriate monitoring equipment for all required control devices.
YES
Continued on next graphic.

Step 17 The owner/operator shall install, calibrate, and maintain according to the manufacturer's specifications the following, as appropriate:

- A flow indicator that provides a record of vent stream flow from each affected process vent to the control device at least once every hour. The flow indicator sensor shall be installed in the vent stream at the nearest feasible point to the control device inlet but before the point at which the vent streams are combined.
- For a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in ^{o}C or ±0.5 ^{o}C, whichever is greater. The temperature sensor shall be installed at a location in the combustion chamber downstream of the combustion zone.
- For a catalytic vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ±1 percent of the temperature being monitored in ^{o}C or ±0.5 ^{o}C, whichever is greater. One temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet and a second temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed outlet.
- For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame.
- For a boiler or process heater having a design heat input capacity less than 44 MW, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in ^{o}C or ±0.5 ^{o}C, whichever is greater. The temperature sensor shall be installed at a location in the furnace downstream of the combustion zone.
- For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW, a monitoring device equipped with a continuous recorder to measure a parameter(s) that indicates good combustion operating practices are being used.
- For a condenser, either:
  - A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the condenser; or
  - A temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ±1 percent of the temperature being monitored in ^{o}C or ±0.5 ^{o}C, whichever is greater. One temperature sensor shall be installed at a location in the exhaust vent stream from the condenser, and a second temperature sensor shall be installed at a location in the coolant fluid exiting the condenser.

[40 CFR 264.1033(f)(1), & (2)(i) through (vi)]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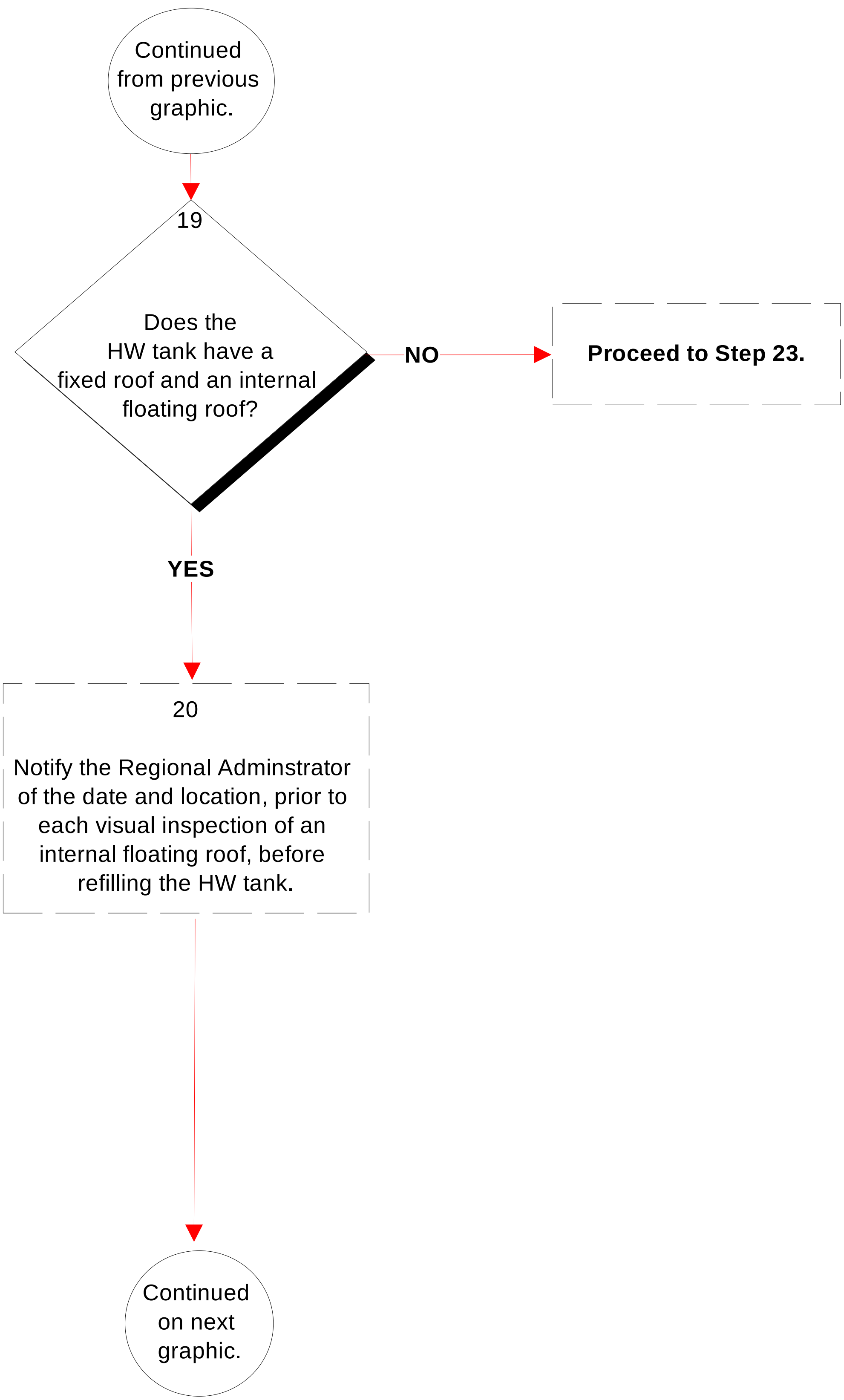
18
If a carbon adsorption system is part of the control equipment, it must also be inspected and monitored.
Continued on next graphic.

Step 18 For a carbon adsorption system that regenerates the carbon bed directly in a control device such as fixed-bed carbon adsorber, either:

- A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the carbon bed; or
- A monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle.

For carbon adsorption system such as a carbon canister that does ***not*** regenerate the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon on a regular basis by using one of the following procedures:

- Monitor the concentration level of the organic compounds in the exhaust vent stream from the carbon adsorption system on a regular schedule, and replace the existing carbon with fresh carbon immediately when carbon breakthrough is indicated. The monitoring frequency shall be daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity established as a requirement of Sec. 264.1035(b)(4)(iii)(G), whichever is longer; or
- Replace the existing carbon with fresh carbon at a regular, predetermined time interval that is less than the design carbon replacement interval established as a requirement of Sec. 264.1035(b)(4)(iii)(G).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19
Does the HW tank have a fixed roof and an internal floating roof?
NO
Proceed to Step 23.
YES
20
Notify the Regional Adminstrator of the date and location, prior to each visual inspection of an internal floating roof, before refilling the HW tank.
Continued on next graphic.

Step 19 After installation, owners or operators of internal floating roofs shall visually inspect the floating roof and its closure devices for defects that could result in air pollutant emissions. Defects include, but are not limited to: The internal floating roof is not floating on the surface of the liquid inside the tank; liquid has accumulated on top of the internal floating roof; any portion of the roof seals have detached from the roof rim; holes, tears, or other openings are visible in the seal fabric; the gaskets no longer close off the hazardous waste surface from the atmosphere; or the slotted membrane has more than 10 percent open area.

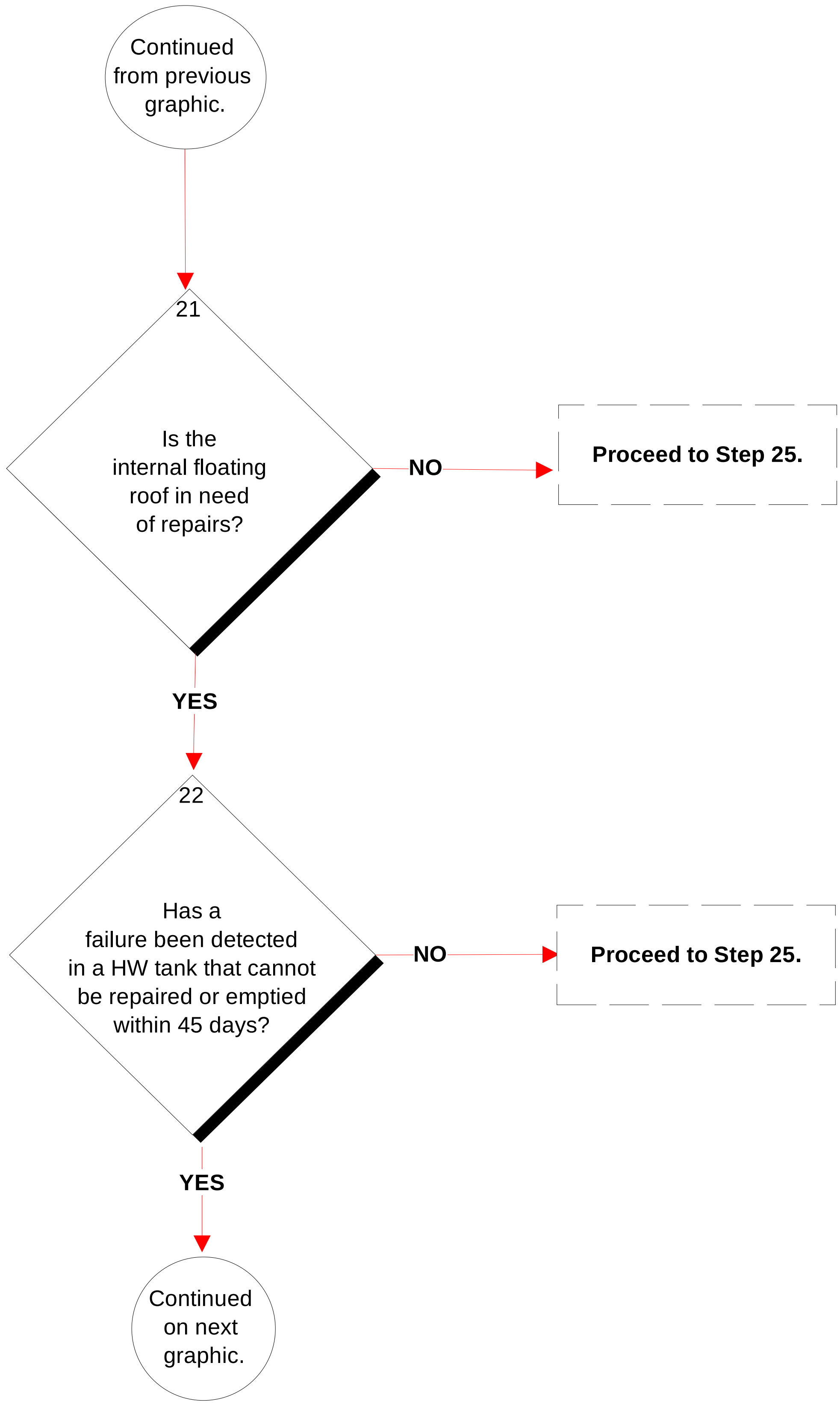
The owner or operator shall inspect the internal floating roof components as follows unless the owner or operator is using the alternative below:

- Visually inspect the internal floating roof components through openings on the fixed-roof (e.g., manholes and roof hatches) at least once every 12 months after initial fill, and
- Visually inspect the internal floating roof, primary seal, secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) each time the tank is emptied and degassed and at least every 10 years.

The internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) should also be inspected each time the tank is emptied and degassed. If the internal floating roof has defects (e.g., the primary seal has holes, tears, or other openings in the seal or the seal fabric; or the gaskets no longer close off the waste surfaces from the atmosphere; or the slotted membrane has more than 10 percent open area) the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the tank with HW.

As an alternative to performing these inspections, for an internal floating roof equipped with two continuous seals mounted one above the other, the owner or operator may visually inspect the internal floating roof, primary and secondary seals, gaskets, slotted membranes, and sleeve seals (if any) each time the tank is emptied and degassed and at least every 5 years. [40 CFR 264.1084(e)(3)]

Step 20 Owners/operators shall notify the Regional Administrator prior to each inspection of a HW tank using a fixed roof with an internal floating roof. For visual inspections of an internal floating roof in a tank that has been emptied and degassed, written notification identifying the date and location of the inspection shall be prepared and sent by the owner or operator so that it is received by the Regional Administrator at least 30 calendar days before refilling the tank. However, when a visual inspection is unplanned, the owner or operator shall notify the Regional Administrator as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the Regional Administrator at least 7 calendar days before refilling the tank. [40 CFR 264.1084(e)(3)(iv)]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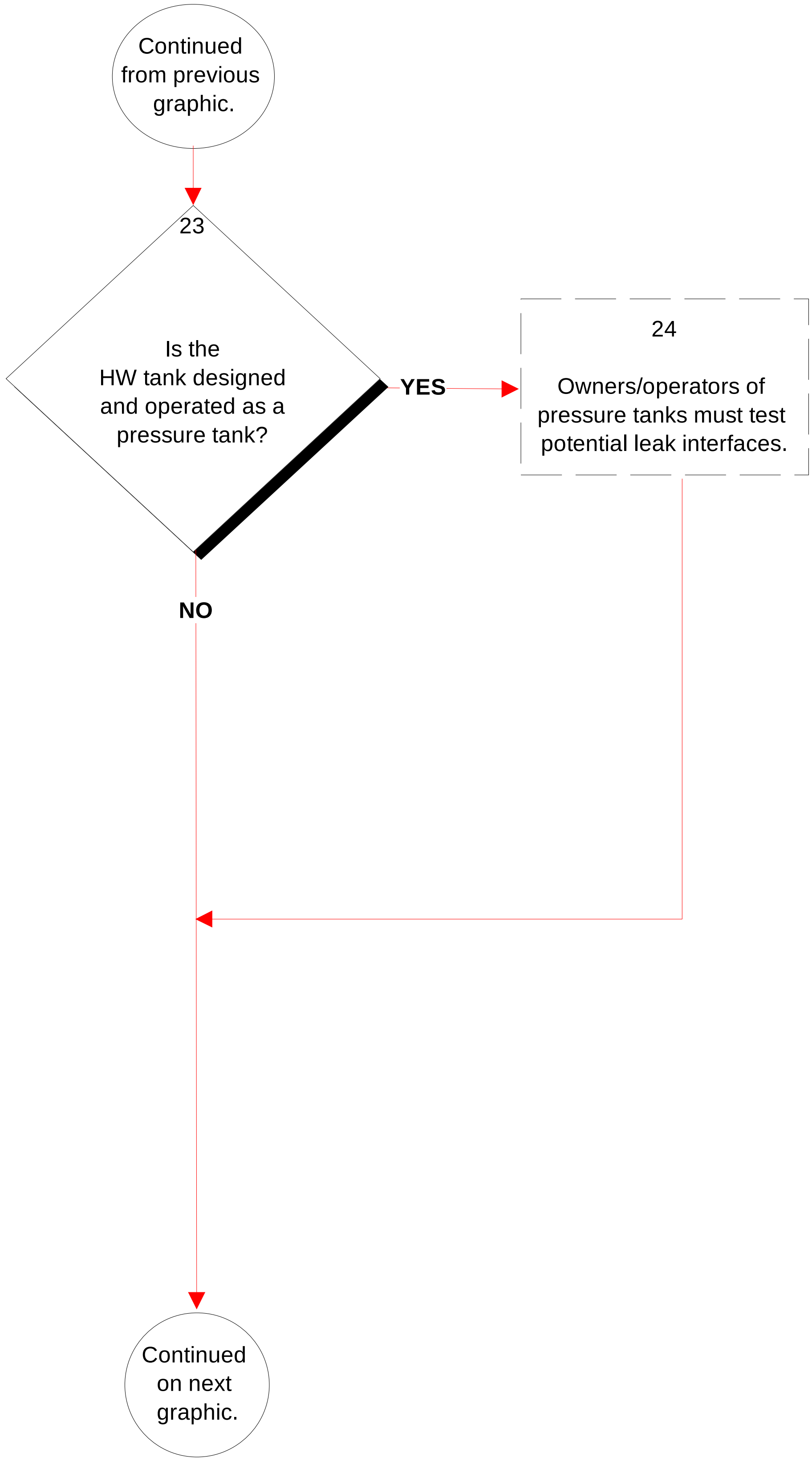
21
Is the internal floating roof in need of repairs?
NO
Proceed to Step 25.
YES
22
Has a failure been detected in a HW tank that cannot be repaired or emptied within 45 days?
NO
Proceed to Step 25.
YES
Continued on next graphic.

Step 21 If a defect is detected (e.g., the internal floating roof is not resting on the surface of the HW inside the tank or there is liquid accumulated on top of the roof, any portion of the roof seals have detached from the roof rim, there are holes or tears in the seal fabric), the owner/operator shall make first efforts at repair of the defect no later than 5 calendar days after detection.

Step 22 The owner or operator shall repair a defect or failure that is detected during inspections required by this module as soon as possible, but no later than 45 calendar days after detection. Repair of a defect or failure may be delayed <u>beyond</u> 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed <u>before</u> the process or unit resumes operation.

[40 CFR 264.1084(k)(2)]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23
Is the HW tank designed and operated as a pressure tank?
YES
24
Owners/operators of pressure tanks must test potential leak interfaces.
NO
Continued on next graphic.

Step 23 To be considered a pressure tank, tank openings must be equipped with closure devices that are designed to operate with ***no detectable organic emissions*** during routine operations, including filling and emptying. Whenever an affected HW is in the tank, the tank shall be operated as a closed system that does not vent to the atmosphere except (1) in the event that a safety device, as defined in 40 CFR 265.1081, is required to open to avoid an unsafe condition; and (2) at those times when purging of inerts from the tank is required and the purge stream is routed to a Subpart CC-compliant closed-vent system and control device. [40 CFR 264.1084(h)]

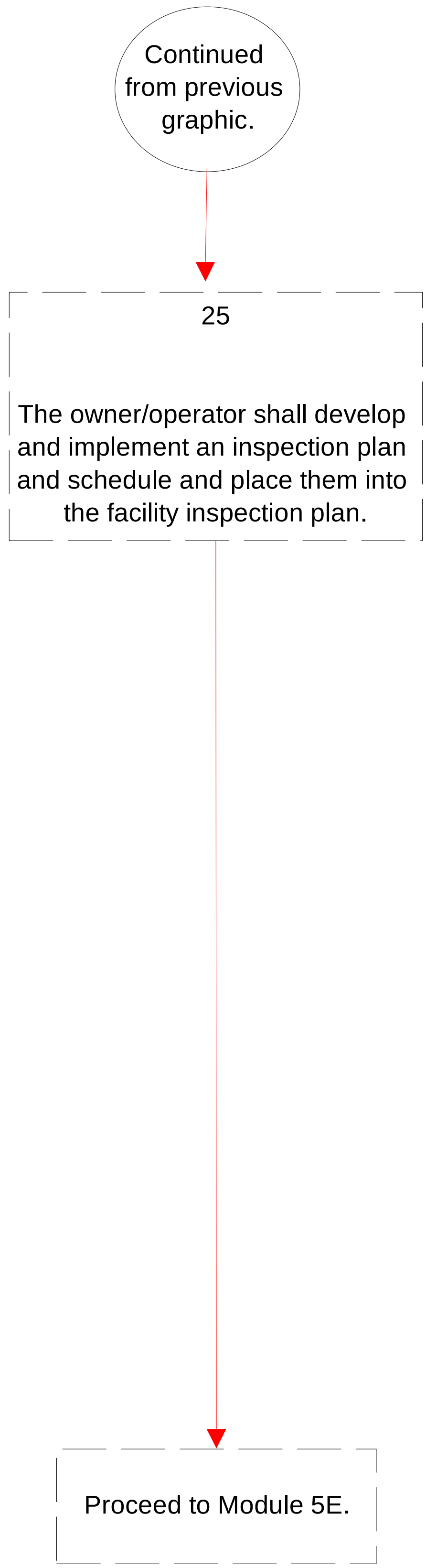
Step 24 Owners/operators will need to test each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices to ensure that the tank is designed and operates with no detectable emissions. Potential leak interfaces that are associated with covers and closure devices include, but are not limited to: The interface of the cover and its foundation mounting; the periphery of any opening on the cover and its associated closure device; and the sealing seat interface on a spring-loaded pressure relief valve.

The test shall be performed when the HW tank contains a HW having an organic concentration representative of the range of concentrations for the HW expected to be managed in the unit. During the test, the cover and closure devices shall be secured in the closed position.

Each potential leak interface shall be checked by traversing the instrument probe around the potential leak interface as close to the interface as possible, as described in Method 21 of 40 CFR part 60, appendix A. In the case when the configuration of the cover or closure device prevents a complete traverse of the interface, all accessible portions of the interface shall be sampled. In the case when the configuration of the closure device prevents any sampling at the interface and the device is equipped with an enclosed extension or horn (e.g., some pressure relief devices), the instrument probe inlet shall be placed at approximately the center of the exhaust area to the atmosphere.

Owners and operators shall calculate and compare with the value of 500 ppmv the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level determined according to the procedures in and performance criteria of Method 21 of 40 CFR part 60, appendix A, except when monitoring a seal around a rotating shaft that passes through a cover opening, in which case the comparison shall be as specified in paragraph (d)(9) of this section. If the difference is less than 500 ppmv, then the potential leak interface is determined to operate with no detectable organic emissions.

For the seals around a rotating shaft that passes through a cover opening, the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of 10,000 ppmw. If the difference is less than 10,000 ppmw, then the potential leak interface is determined to operate with no detectable organic emissions.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25
The owner/operator shall develop and implement an inspection plan and schedule and place them into the facility inspection plan.
Proceed to Module 5E.

Step 25 The owner or operator shall inspect and monitor air emission control equipment used to comply with this Subpart CC tank standards 40 CFR 264.1084. The owner/operator shall develop and implement a written plan and schedule to perform all inspections and monitoring requirements. The owner/operator shall incorporate this plan and schedule into the facility inspection plan required by 40 CFR 264.15.
[40 CFR 264.1088]

The owner/operator shall inspect the readings from each monitoring device required by Steps 15 - 18 at least once each operating day to check control device operation and, if necessary, immediately implement the corrective measures necessary to ensure the control device operates in compliance with the requirements of this section.

An alternative operational or process parameter may be monitored if it can be demonstrated that another parameter will ensure that the control device is operated in conformance with these standards and the control device's design specifications.
[40 CFR 264.1033(f)(2)(vii) & (3) and 264.1033(i)]

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5.6 Module E: Recordkeeping Requirements

5.6.1 Introduction

Owners/operators of permitted TSDFs and interim status TSDFs/90-day generators must maintain accurate records of all activities required by 40 CFR Part 264, Subpart CC and 40 CFR Part 265, Subpart CC, respectively. TSDF records are maintained in the facility operating record. However, 90-day generators are not required to maintain an operating record and, therefore, can maintain Subpart CC documentation in their administrative files and records. HW tank records that must be kept include:

- The results of all waste determinations such as of volatile organic concentrations at the point of waste origination/waste treatment and maximum organic vapor pressures (MOVP);
- Tank identification number
- Emission control equipment inspection and monitoring results, including dates and information related to each defect detected and the repairs made;
- Documentation describing internal and external floating roof design and the dimensions;
- Calculations and measurements verifying that enclosures are permanent total enclosure;
- Design specifications/certifications, performance test results, planned routine maintenance operations, and unexpected control device system malfunctions and related actions;
- Management of carbon removed from carbon adsorption systems;
- Identification of incinerators, boilers, or industrial furnaces used to treat HW in accordance with the general requirements of Subpart CC; and
- Identification of HW tank covers/devices designated as "unsafe to inspect or monitor."

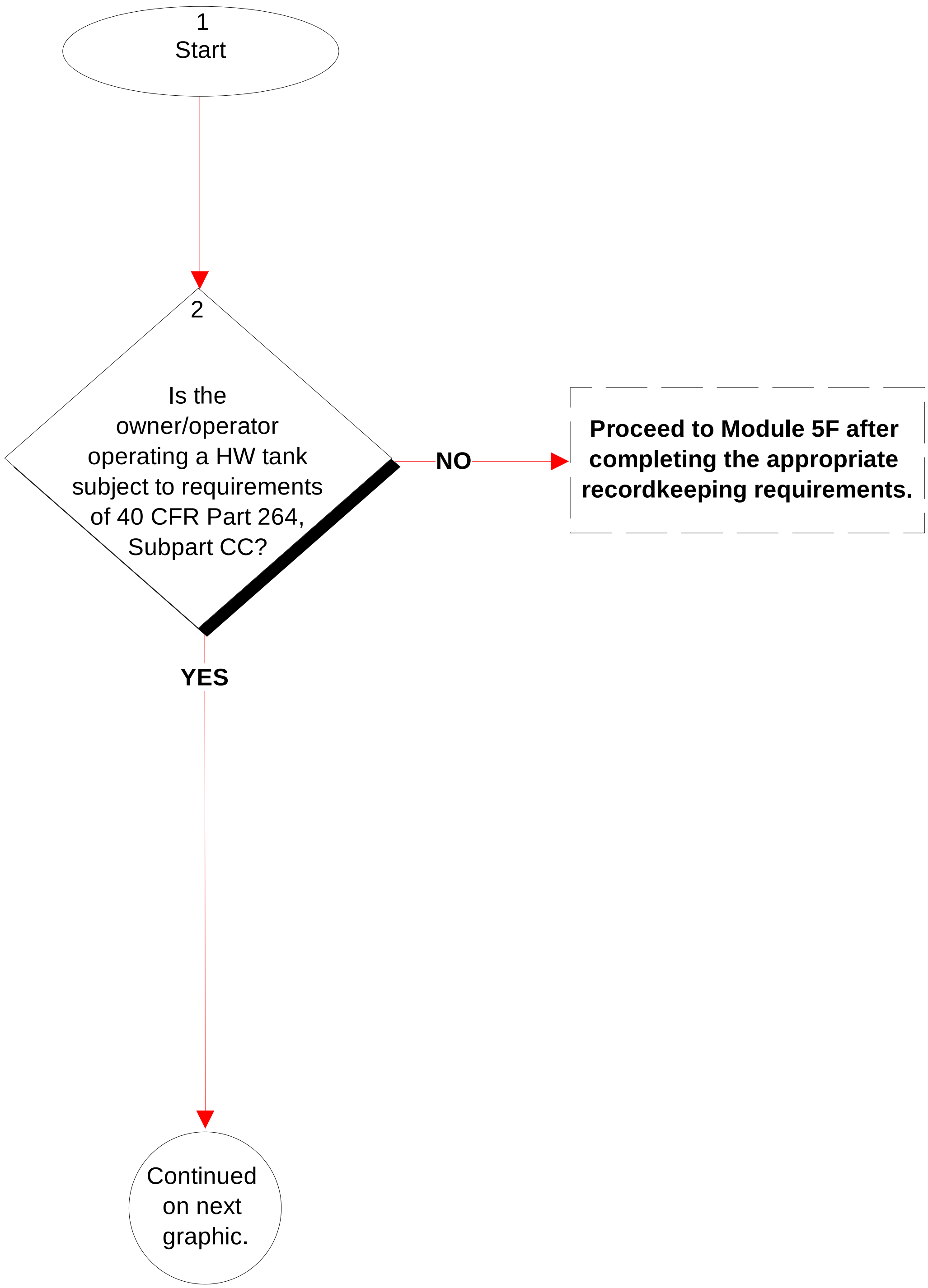
5.6.2 Milestones

Has the owner/operator maintained all records in accordance with 40 CFR 264.1088/265.1089?

Owners/operators of TSDFs and 90-generators should examine their operating record and determine whether:

- Documentation for air emission control equipment design documentation and information is retained the facility operating record or 90-day generator files until the air emission control equipment is replaced or otherwise no longer in service;
- Information regarding HW tanks that are operating air emission controls in accordance with applicable CAA regulations codified in 40 CFR Part 60, Part 61, and/or Part 63 are maintained in the operating record for as long as a HW tank system is not using Subpart CC air emission controls; and
- Remaining Subpart CC records are maintained in the operating record for a minimum of 3 years.

Figure 5.5: Recordkeeping Requirements



Step 1 Start.

Step 2 HW tanks that are exempted from complying with Subpart CC under 40 CFR 264.1080(b) are, with one exception, not required to comply with Subpart CC recordkeeping provisions. The exception is for affected HW tanks that are in compliance with an applicable CAA regulation at 40 CFR Part 60, Part 61, or Part 63 [40 CFR 264.1080(b)(7)]. For these tanks, owners/operators must record and maintain the following information in the operating record for as long as the waste management unit is not using HW tank air emission controls specified in 40 CFR 264.1084:

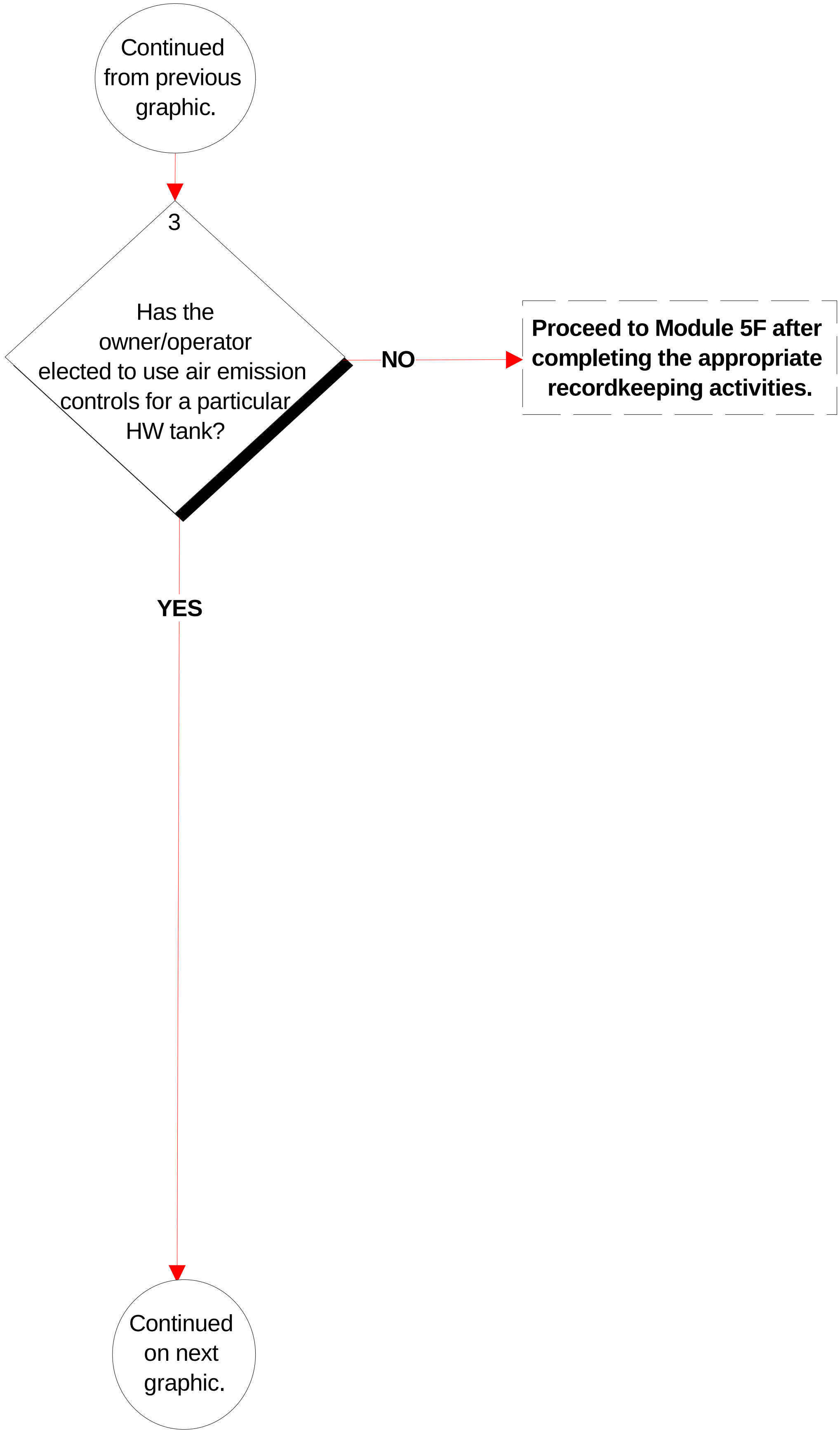
- Certification that the HW tank is equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation (40 CFR part 60, part 61, or part 63), and
- Identification of the specific 40 CFR part 60, part 61, or part 63 requirement, which the HW tank is using to remain compliant.

For HW tanks with "equipment" subject to 40 CFR Part 61, Subpart V, owners/operators may demonstrate Subpart CC compliance by maintaining documentation pursuant to either Subpart CC or Subpart V, to the extent that the documentation required by 40 CFR Part 61 duplicates that of Subpart CC.

For HW tanks exempted [under 40 CFR 264.1082(c)] from Subpart CC air emission control ***standards*** specified in 40 CFR 264.1084, owners/operators are ***not*** exempted from and, therefore, remain subject to prescribed Subpart CC recordkeeping provisions. For these and other HW tanks using controls that are subject to requirements of Subpart CC, each owner or operator shall record and maintain the information specified in 40 CFR 264.1089(b) through (j). In addition to the tank/control-specific information described later in this module, this includes the following information, as applicable:

- A HW tank identification number (or other unique identification description as selected by the owner or operator).
- Each inspection required by 40 CFR 264.1084 including the date each inspection was conducted and, for each defect detected during the inspection: The location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with the provisions of 40 CFR 264.1084, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.

Except for air emission control equipment design documentation and CAA-related information (discussed above), these and other records required under 40 CFR 264.1089 shall be maintained in the operating record for a minimum of 3 years. Air emission control equipment design documentation shall be maintained in the operating record until the air emission control equipment is replaced or otherwise no longer in service.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3
Has the owner/operator elected to use air emission controls for a particular HW tank?
NO
Proceed to Module 5F after completing the appropriate recordkeeping activities.
YES
Continued on next graphic.

Step 3 An owner/operator electing not to use air emission controls for a particular tank otherwise subject to 40 CFR Part 264, Subpart CC, in accordance with the hazardous waste organic concentration conditions in 40 CFR 264.1082(c)(1) or 40 CFR 264.1082(c)(2)(i) through (c)(2)(vi), shall record the information used for each waste determination (e.g., test results, measurements, calculations, and other documentation) in the facility operating log. An initial determination that HW entering the tank has an average VO concentration at the point of waste origination/treatment of less that 500 ppmw must be made before the first time any portion of the material is placed into an exempted tank. If analysis results for waste samples are used for the waste determination, then the owner/operator shall record the date, time, and location that each waste sample is collected [40 CFR 264.1089(f)(1)]. Also, owners/operators using direct measurements to determine average VO concentrations at the point of waste origination shall:

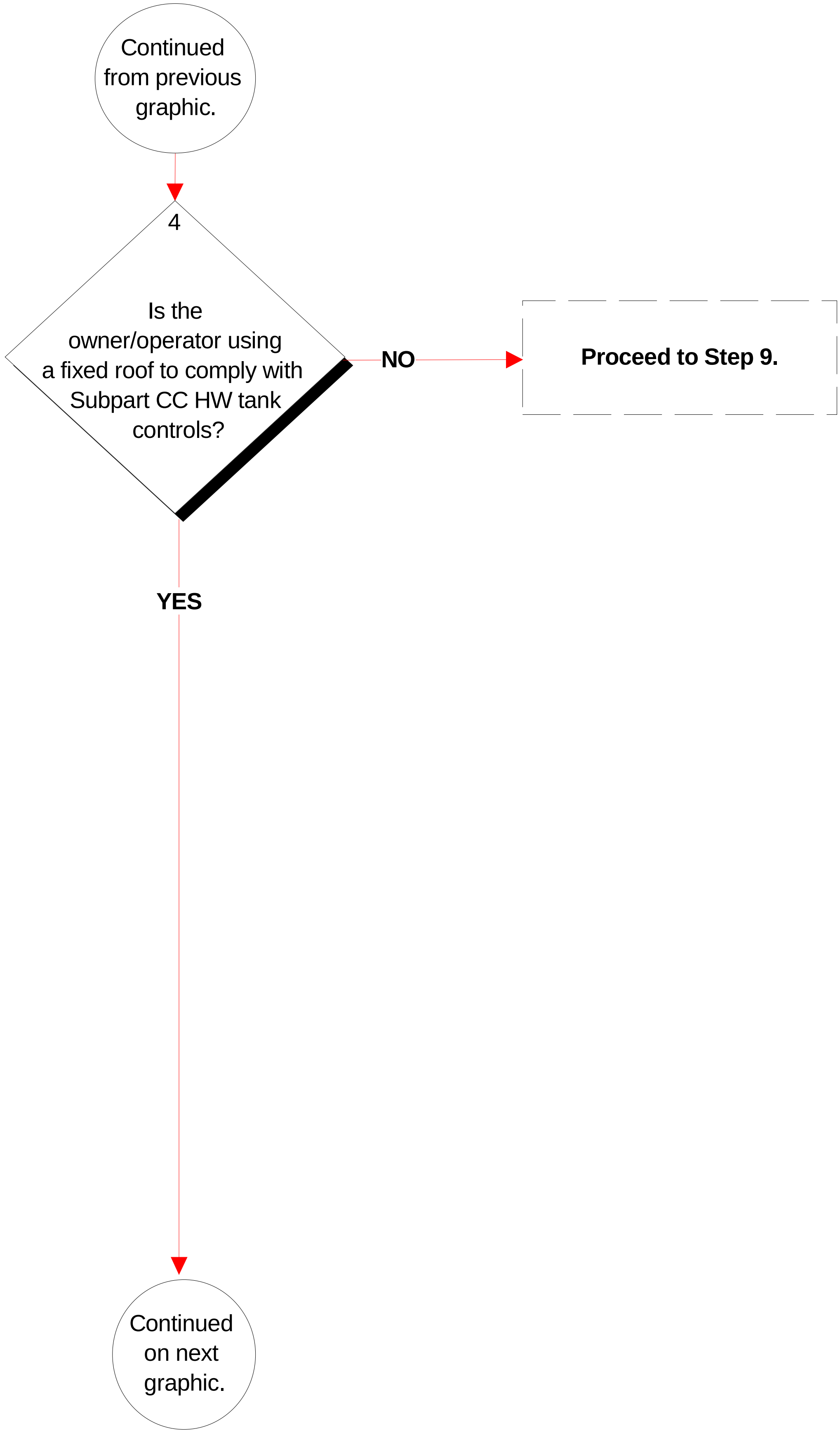
- Identify and record the point of waste origination for the HW,
- Designate, on a mass-weighted average basis, the averaging period to be used for determining the average VO concentration for the HW stream; and
- Prepare and maintain on-site a written site sampling plan that describes the procedure by which representative samples of the HW stream are collected and handled, and by which sample integrity is maintained [40 CFR 265.1084(a)(3)].

In addition to preparing and maintaining the same type of written site sampling plan, owners/operators placing ***treated*** HW in an tank exempted from using air emission controls must identify and record:

- The designated provision in 40 CFR 264.1082(c)(2)(i) through (c)(2)(vi) under which the waste determination for the treated HW is being performed,
- The point of waste treatment for the hazardous waste,
- The averaging period used (or designated to be used) for determining the average VO concentration for the HW stream on a mass-weighted average basis.
  [40 CFR 265.1084(b)(2) and (3)].

Although they are not subject to the preceding waste determination requirements, owners/operators electing to comply with organics removal or destruction requirements of 40 CFR 264.1082(c)(2)(vii) or (c)(2)(viii) must record the identification number for the incinerator, boiler, or industrial furnace in which the HW is treated.

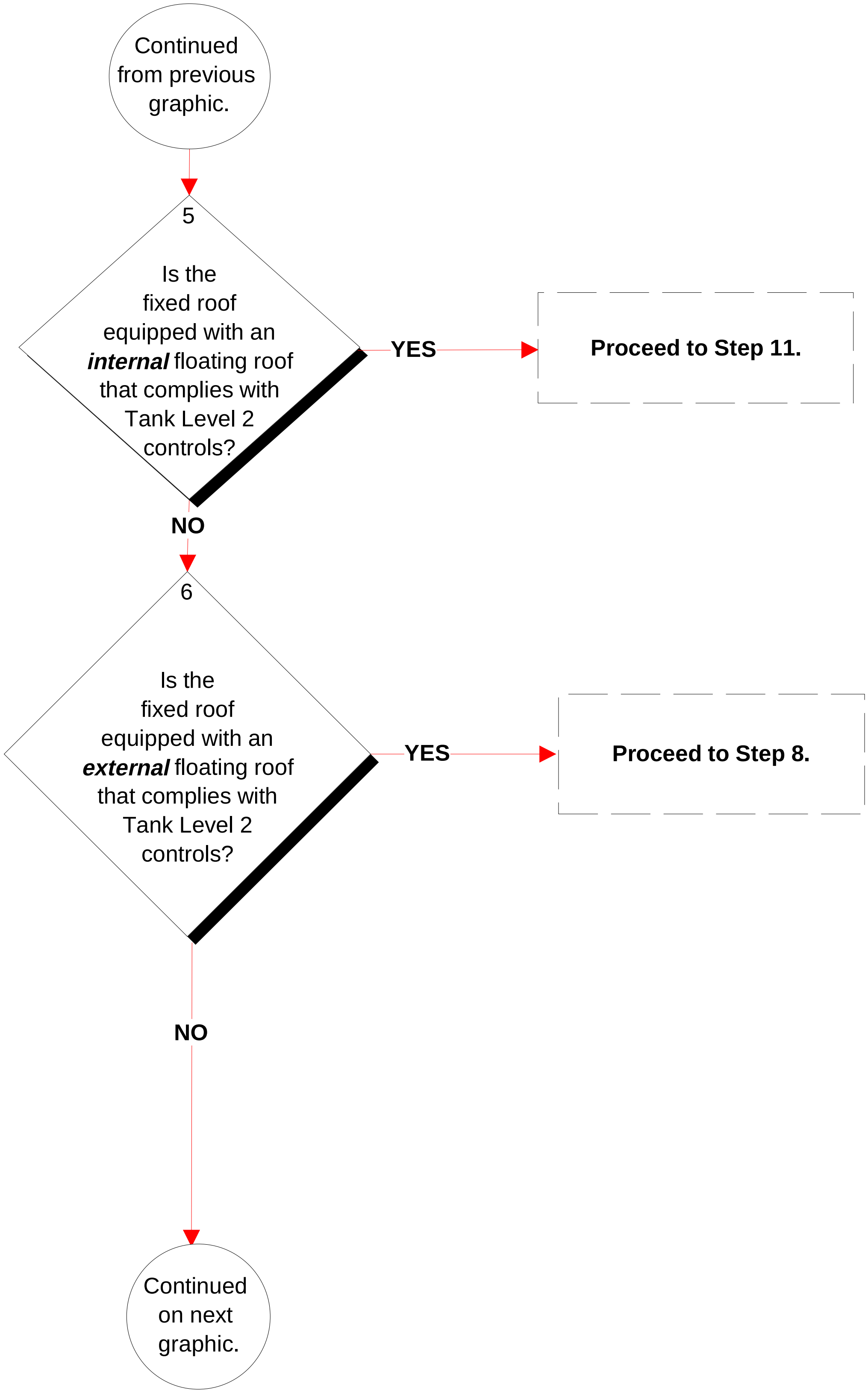
Figure 5.5: Recordkeeping Requirements - continued



Step 4 Regardless of whether they are equipped with a closure device or a closed-vent system that is vented to a control device, owners/operators that are using a fixed roof to comply with Tank Level 1 controls [40 CFR 264.1084(c)] shall determine the maximum organic vapor pressure (MOVP) for each HW to be managed. The MOVP must be determined before the first time HW is placed in the tank. Owner/operators managing HW in accordance with Tank Level 1 standards must record the following information for each determination that the MOVP of the HW is less than the applicable limit for the selected tank design capacity:

- Date and time each waste sample is collected for direct measurement of maximum organic vapor pressure in accordance with 40 CFR 264.1083(c);
- The analysis methods used;
- The analysis results of each determination; and
- The tank dimensions and design capacity.

This determination may be based on either direct measurement or knowledge. Direct measurement procedures should appear in a written sampling plan. When knowledge is used, documentation that presents the information used as the basis for the owner/operator determination must be prepared and maintained.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5
Is the fixed roof equipped with an ***internal*** floating roof that complies with Tank Level 2 controls?
YES
Proceed to Step 11.
NO
6
Is the fixed roof equipped with an ***external*** floating roof that complies with Tank Level 2 controls?
YES
Proceed to Step 8.
NO
Continued on next graphic.

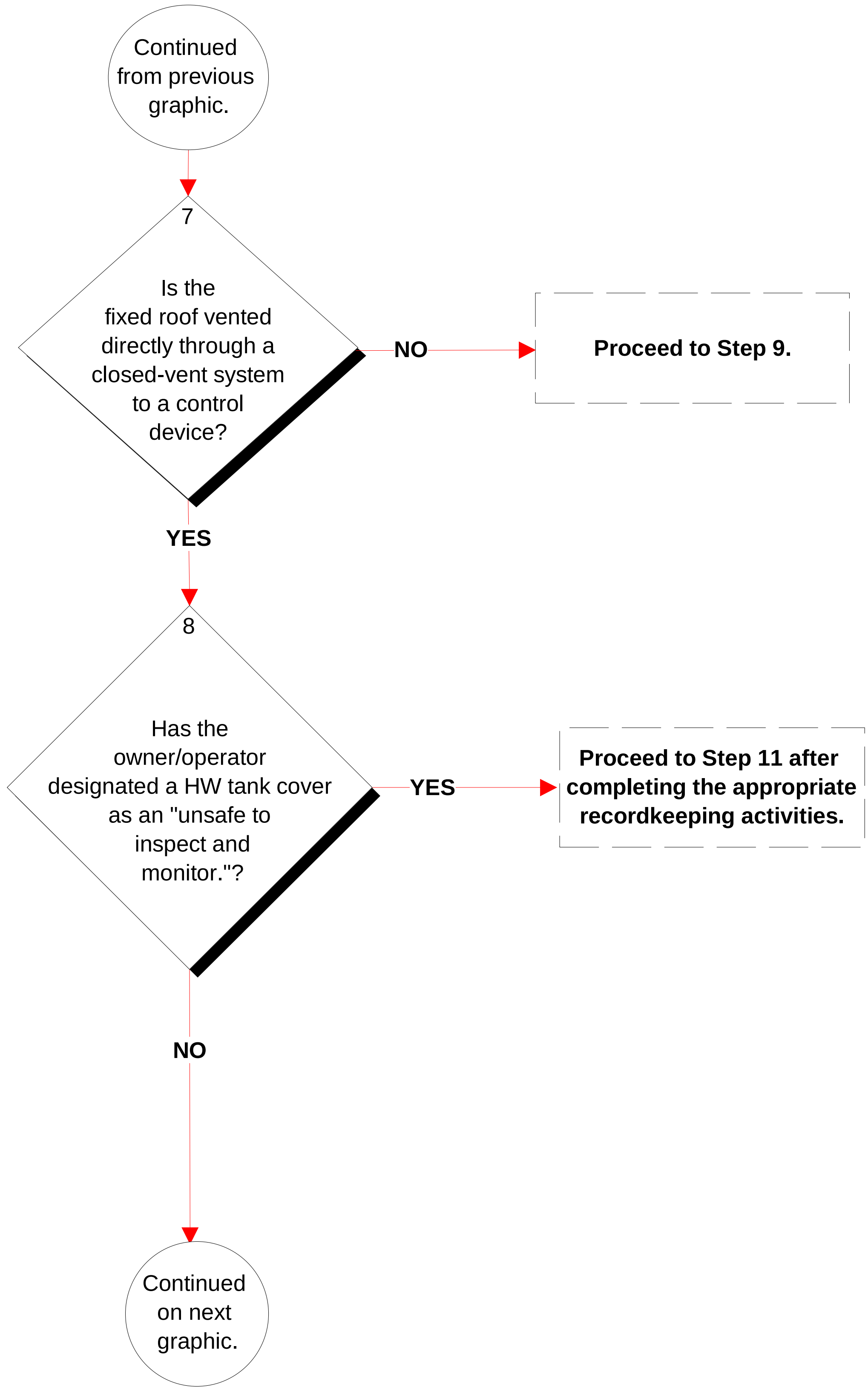
Step 5 Owners/operators who elect to install and operate a fixed roof equipped with an ***interna***l floating roof shall include the following information in the operating record:

- For each HW tank, a tank identification number (or other unique identification description as selected by the owner or operator);
- Documentation describing the control equipment design;
- Records of each visual inspection performed as required by 40 CFR 264.1084(e)(3)/265.1084(e)(3). Record shall identify each tank on which the inspection was performed and shall include the date the tank inspection was conducted, the observed condition of each component of the control equipment (seals, internal floating roof, and fittings); and
- If any of the defects described in 40 CFR 264.1084(e)(3)/265.1084(e)(3) are detected during the visual inspection, the records shall identify: The location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with the provisions of 40 CFR 265.1084/265.1085, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected. [40 CFR 264.1089(b)(1)(ii)/265.1090(b)(1)(ii)]

Step 6 Owners/operators who elect to install and operate a fixed roof equipped with an ***external*** floating roof shall include the following information in the operating record:

- For each HW tank, a tank identification number (or other unique identification description as selected by the owner or operator);
- Documentation describing the floating roof design and the dimensions of the tank;
- Records for each seal gap inspection [40 CFR 264.1085(f)(3)/265.1085(f)(3)] describing the results of the seal gap measurements, including: the date that the measurements were performed, the raw data obtained for the measurements, and the calculations of the total gap surface area; and
- Records for each seal gap measurement that does not conform to specifications [264.1085(f)(1)/265.1085(f)(1)] including a description of the repairs that were made, the date the repairs were made, and the date the tank was emptied, if necessary.

[40 CFR 264.1089(b)(2)(iii)/265.1090(b)(2)(iii)]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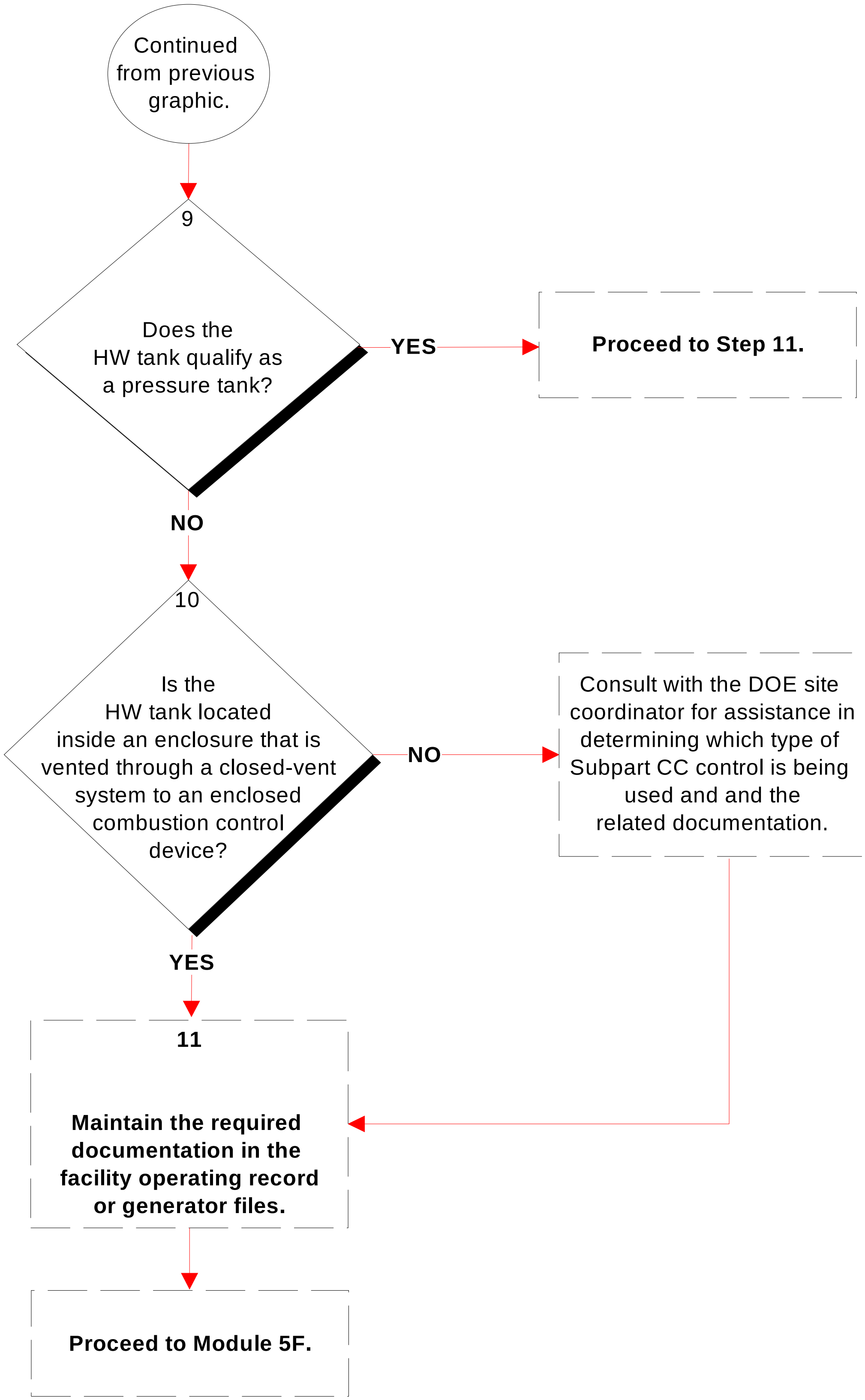
7
Is the fixed roof vented directly through a closed-vent system to a control device?
NO
Proceed to Step 9.
YES
8
Has the owner/operator designated a HW tank cover as an "unsafe to inspect and monitor."?
YES
Proceed to Step 11 after completing the appropriate recordkeeping activities.
NO
Continued on next graphic.

Step 7 An owner/operator electing to control air emissions by venting them from a fixed-roof tank directly through a closed-vent system to a control device shall maintain the following documentation:

- For each closed-vent system and control device installed in accordance with the requirements of 40 CFR 264.1087/265.1088, including:
  - A certification that is signed and dated by the owner/operator stating that the control device is designed to operate at the performance level documented by a design analysis or by performance tests as specified below, when the tank is, or would be, operating at capacity or the highest level reasonably expected to occur;
  - Design documentation as specified in 40 CFR 264.1035(b)(4) if a design analysis is used, including: information prepared by the owner/operator or by the control device manufacturer that describes the control device design in accordance with 40 CFR 264.1035(b)(4)(iii); and certification by the owner/operator that the control equipment meets the applicable specifications;
  - A performance test plan as specified in 40 CFR 264.1035(b)(3), if performance tests are used, and all tests results;
  - A description and date for each modification that is made to the closed-vent system or control device design;
  - Identification of operating parameters, description of the monitoring device, and diagram of monitoring sensor location(s);
  - A description of the planned routine maintenance that is anticipated to be performed for the control device during the next six month period, including the type of maintenance necessary, planned frequency of maintenance, and lengths of maintenance periods;
  - A description of the type of maintenance that was performed for the control device during the last six month period, including the type of maintenance performed and the total number of hours during which the control device did not meet the closed-vent system specifications due to planned routine maintenance;
  - Information for those unexpected control device system malfunctions that require the control device not control device specifications, including the occurrence and duration of each malfunction of the control device system; the duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed-vent system to the control device while the control device is not properly functioning; and actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation.

Step 8 Owners/operators of HW tanks using (1) a fixed roof equipped with a closure device or connected by a closed-vent system that is vented to a control device or (2) an external floating roof can designate a cover as "unsafe to inspect or monitor." Pursuant to 40 CFR 264.1084(l) shall record in a log that is kept in the facility operating record a list of identification numbers for HW tanks with covers that are designated as "unsafe to inspect and monitor," as well as a written explanation for each cover stating why the cover is unsafe to visually inspect or monitor, and the written plan and schedule for inspecting and monitoring each cover.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9
Does the HW tank qualify as a pressure tank?
YES
Proceed to Step 11.
NO
10
Is the HW tank located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device?
NO
Consult with the DOE site coordinator for assistance in determining which type of Subpart CC control is being used and and the related documentation.
YES
11
Maintain the required documentation in the facility operating record or generator files.
Proceed to Module 5F.

Step 9 Owners/operators who control air pollutant emissions by using a pressure tank must ensure that their HW tank openings are equipped to operate with ***no detectable organic emissions***. For the purpose of complying with Subpart CC this entails a testing of each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices in accordance with the procedures specified in Method 21 of 40 CFR part 60, appendix A.

When determining whether the HW tank operates with no detectable organic emissions, certain criteria must be met (e.g., the test must be performed when HW tank contains a HW having a representative organic concentration; the detection instrument must meet prescribed performance criteria), owners/operators should consider whether they desire to maintain documentation of these and the manner each potential leak interface was checked as a best management practice.

Step 10 An owner/operator using an enclosure to comply with the Tank Level 2 control requirements specified in 40 CFR 264.1084(i)/265.1085(i) shall prepare and maintain the following records:

- The most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" (40 CFR 52.741, appendix B); and
- Records required for the closed-vent system and control device (Go back to Step 7).

Step 11 Owners/operators of TSDFs and 90-generators should examine their HW tank and waste management activities to determine the type of documentation that must be prepared and maintained to comply with Subpart CC. Based on this evaluation, owners/operators should examine their operating record/90-generator files to ensure

- Documentation for air emission control equipment design documentation and information is retained the facility operating record or 90-day generator files until the air emission control equipment is replaced or otherwise no longer in service;
- Information regarding HW tanks that are operating air emission controls in accordance with applicable CAA regulations codified in 40 CFR Part 60, Part 61, and/or Part 63 are maintained in the operating record for as long as a HW tank system is not using Subpart CC air emission controls; and
- Remaining Subpart CC records are maintained in the operating record for a minimum of 3 years.

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5.7 Module F: Reporting Requirements

5.7.1 Introduction

Although HW tanks operating under 40 CFR Part 265 (interim status provisions) are ***not*** subject to any Subpart CC reporting requirements, permitted facilites must report to the EPA Regional Administrator each episode of noncompliance with 40 CFR 264.1082(c)(1) or (c)(2), 40 CFR 264.1084(c), or 40 CFR 264.1087.

For control devices, a report to the Regional Administrator is ***not*** required provided all of the device are operated for a six-month period such that during no period of 24 hours or longer did a control device operate continuously in noncompliance with the operating values identified in 40 CFR 264.1035(c)(4), and no flare was operated with visible emissions for 5 minutes or longer in a two-hour period, as defined in 40 CFR 264.1033(d).

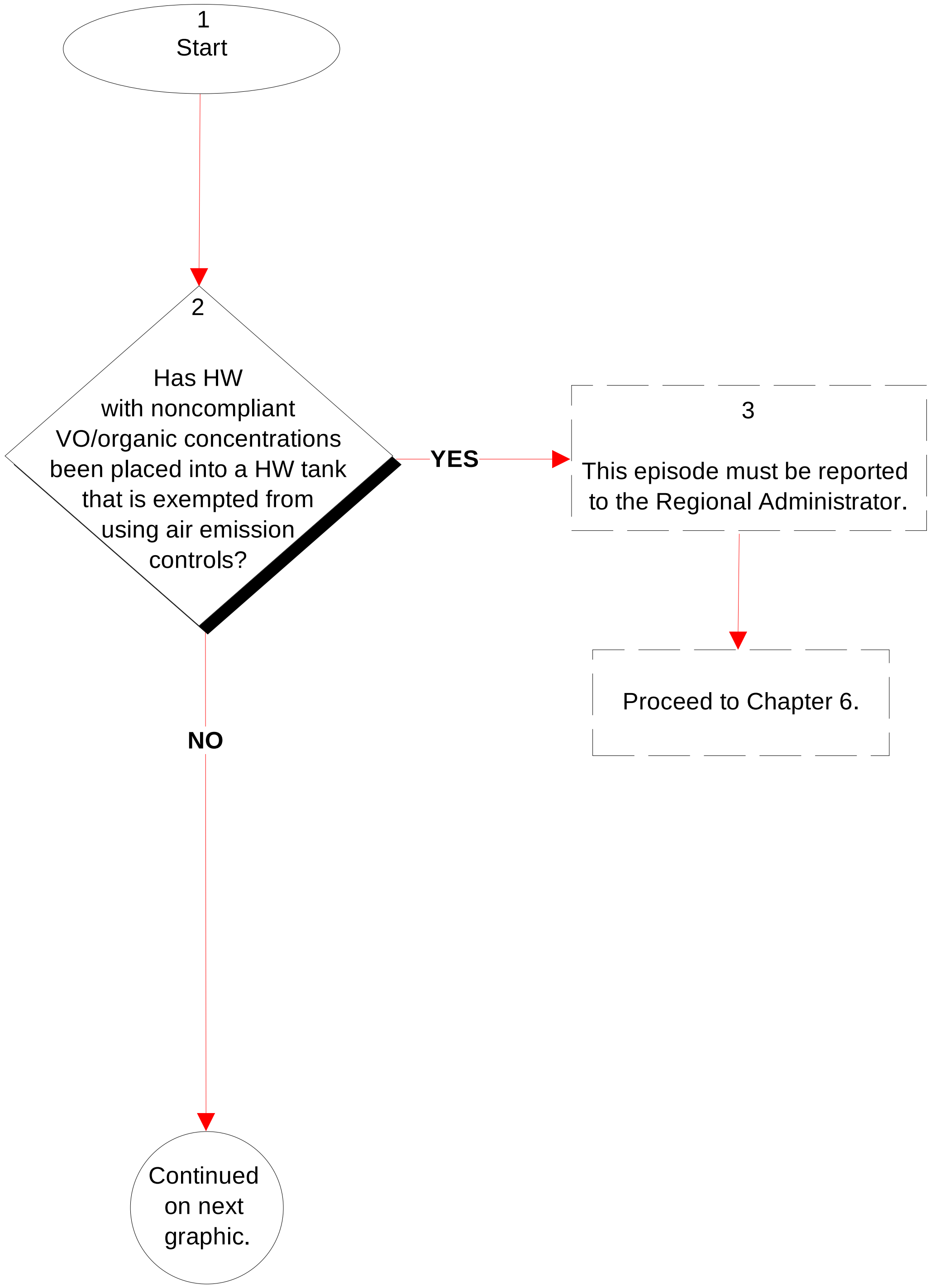
5.7.2 Milestones

Has an episode of noncompliance occurred?

Noncompliance occurs whenever:

- HW with an average VO concentration equal to or greater than 500 ppmw at the point of waste origination is placed in an exempted tank;
- A treated HW whose organic content has not been sufficiently reduced by an organic destruction or removal process and, therefore, does not meet the applicable conditions is placed in an exempted HW tank;
- A control device has emissions exceeding the applicable operating values; or
- A flare operates with visible emissions.

Figure 5.6: Reporting Requirements

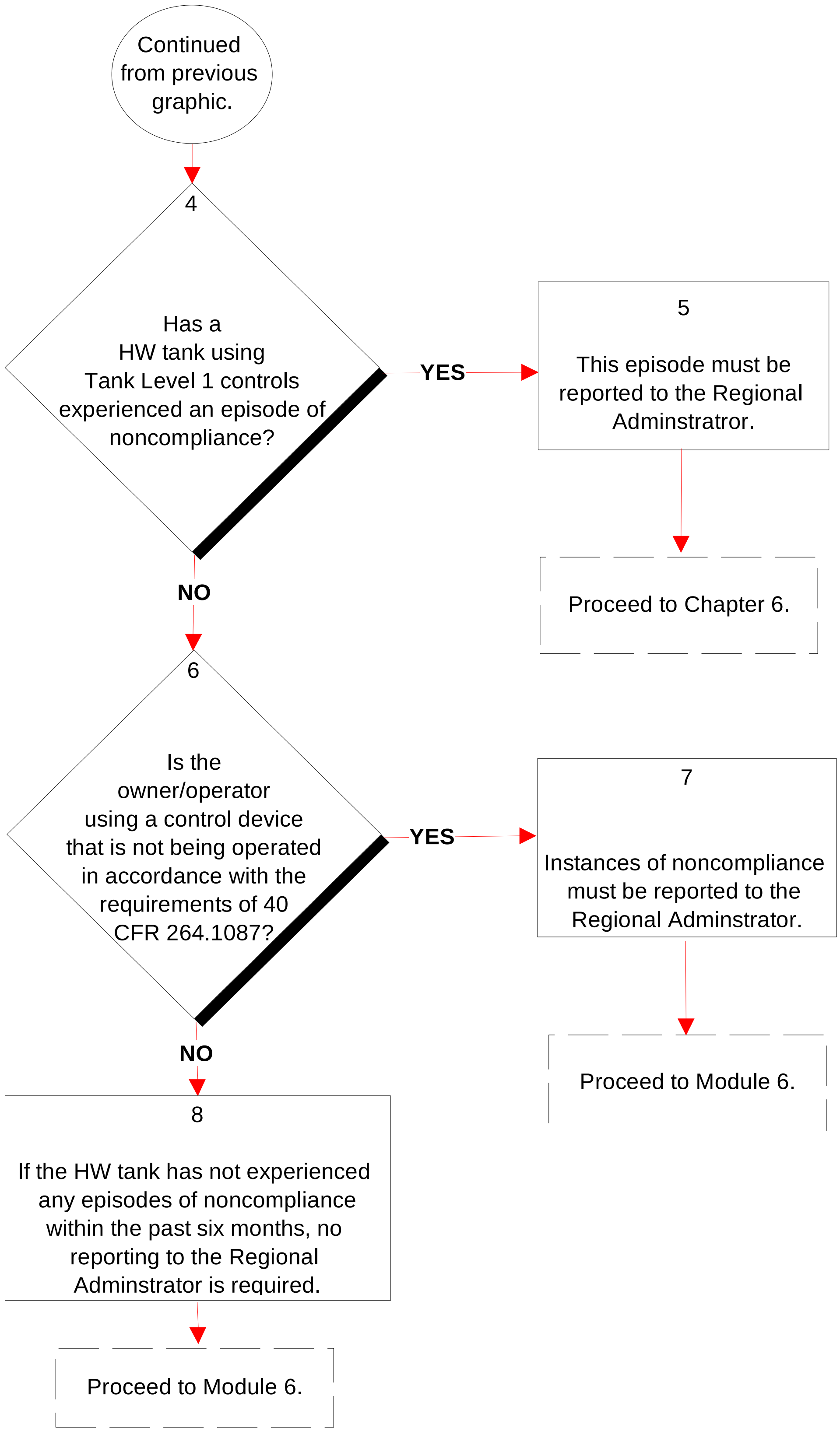


Step 1 Start.

Step 2 Each owner/operator managing HW in a tank exempted from using air emission controls under either the hazardous waste organic concentration conditions or the organic destruction or removal process conditions [40 CFR 264.1082(c)(1) and 40 CFR 264.1082(c)(2)(i) through (c)(2)(vi), respectively] shall report to the Regional Administrator each occurrence when HW that does not meet the specified conditions is placed in an exempted HW tank. Examples of such occurrences include placing in a HW tank that is not using air emission controls a HW having an average VO concentration equal to or greater than 500 ppmw at the point of waste origination; or placing in the exempted HW tank a treated HW which fails to meet the applicable organic destruction or removal process conditions specified in 40 CFR 264.1082(c)(2)(i) through (c)(2)(vi).

Step 3 The owner/operator shall submit a written report within 15 calendar days of the time that the owner/operator becomes aware of the occurrence. The written report shall contain the EPA identification number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent reoccurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner/operator.

Figure 5.6: Reporting Requirements - continued



Step 4 Each owner/operator using Tank Level 1 air emission controls in accordance with the requirements 40 CFR 264.1084(c) must report to the Regional Administrator each occurrence when HW is managed in the tank in noncompliance with the conditions specified in 40 CFR 264.1084(b). Noncompliance occurs, for example, when the tank is used for a waste stabilization process or the maximum organic vapor pressure (MOVP) of the HW in the tank equals or exceeds the MOVP limit for the tank's design capacity category.

Step 5 The owner/operator shall submit a written report within 15 calendar days of the time that the owner/operator becomes aware of the occurrence. The written report shall contain the EPA identification number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent reoccurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner/operator.

Step 6 Each owner/operator using a control device in accordance with the requirements of 40 CFR 264.1087 (standards for closed-vent systems and control devices) shall submit a semiannual written report to the Regional Administrator that describes each occurrence during the previous 6-month period (1) when a control device operated continuously for 24 hours or longer in noncompliance with the applicable operating values [defined in 40 CFR 264.1035(c)(4)]; or (2) when a flare operated with visible emissions for 5 minutes or longer in a two-hour period, as defined in 40 CFR 264.1033(d).

Step 7 The written report shall include the EPA identification number, facility name and address, an explanation of why the control device could not be returned to compliance within 24 hours, and actions taken to correct the noncompliance. The report shall be signed and dated by an authorized representative of the owner/operator.

Step 8 A report to the Regional Administrator in accordance with Step 7 is not required for a 6-month period during which all control devices subject to 40 CFR Part 264, Subpart CC, are operated by the owner/operator such that during no period of 24 hours or longer did a control device operate continuously in noncompliance with the applicable operating values and no flare was operated with visible emissions for 5 minutes or longer in a two-hour period, as defined in 40 CFR 264.1033(d).

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Chapter 6
Operating and Inspection Requirements

Contents

6.1 Introduction

6.1.1 Background

The proper operation of HW tanks mandates that reactive, ignitable, or incompatible HWs that could cause the tank to leak, rupture, or explode be kept out of the HW tank system until those HWs are treated to reduce the potential for fires or explosions. The proper operation of HW tank systems also requires the use of spill prevention procedures during transfer operations, loading, or unloading of HW tanks.

Daily inspection of tank systems is necessary to identify and remedy minor problems before they escalate and affect the integrity of the tank system.

6.1.2 Major Requirements

This chapter contains two modules, one detailing operating requirements, and one containing inspection requirements.

- **Module A: Operating Requirements.** This module addresses those requirements that must be met to safely operate HW tanks. This involves proper management of the tanks to reduce the threat of fire or explosion, and to ensure that corrosion does not occur. It also identifies requirements for use of appropriate controls and practices to prevent spills and overflows by the owner or operator.
- **Module B: Inspection Requirements.** This module addresses routine inspections that must be conducted to maintain properly operating HW tanks. Through a daily inspection program, potential problems can be quickly identified and corrected.

6.2 Module A: Operating Requirements

6.2.1 Introduction

The HW tank operating requirements detail precautions that must be taken to prevent spills and overflows from HW tank systems during transfer operations, loading, or unloading. EPA's major concern is with releases that may occur during these operations, especially for tank systems that do not yet have secondary containment.

All of the components used for the transfer of HW should be inspected on a regular basis and repaired or replaced when damage is discovered. These components include:

- Hoses, pipes, fittings, etc.;
- Couplings, pumps, and valves;
- Curbs, containment surfaces, and catchbasins;
- Control instrumentation; and
- Tank vehicles. [4]

To ensure that proper handling and other safety precautions can be taken to prevent fires, explosion, or leaks, the nature of the HW (such as its ignitability or reactivity) must be understood. Except under emergency conditions, ignitable or reactive wastes may not be placed into tanks unless certain requirements are met. It also must be determined that the HW is compatible with other HWs with which it might be stored or treated, or with the tank itself. Incompatibility of HWs may result in explosions or fires.

6.2.2 Milestones

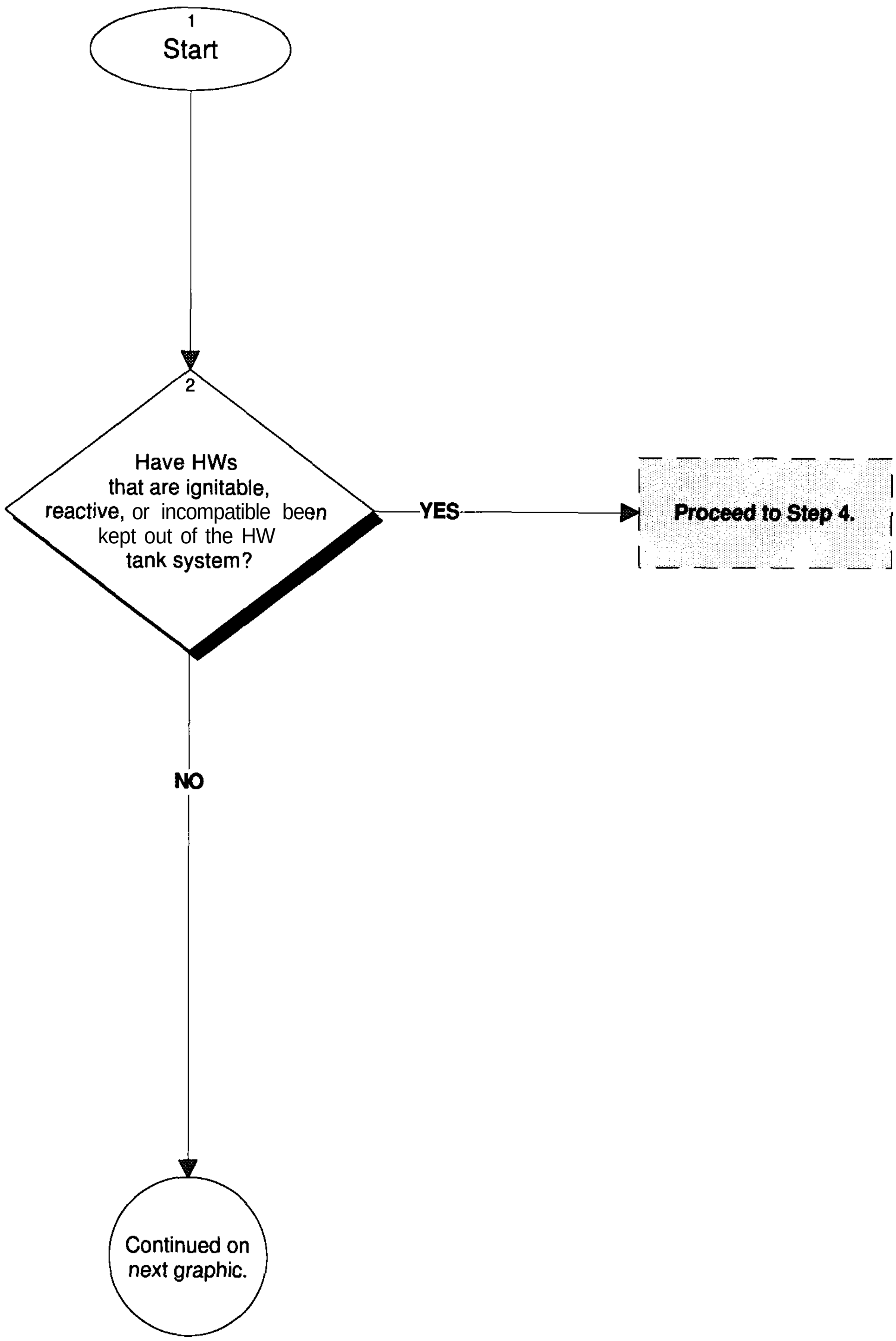
Have proper operating procedures been implemented?

The following elements must be completed to safely operate HW tanks:

- Proper spill prevention procedures and equipment must be utilized; and
- All ignitable, reactive, or incompatible HWs must be neutralized before placement in tanks (unless placement is in response to an emergency situation).

The following flowchart details applicable operating and spill prevention requirements.

Figure 6.1: Operating Requirements



Step 1 Start

Step 2 Ignitable or reactive waste must not be placed in HW tank systems unless, as required by 40 CFR 264/265.198:

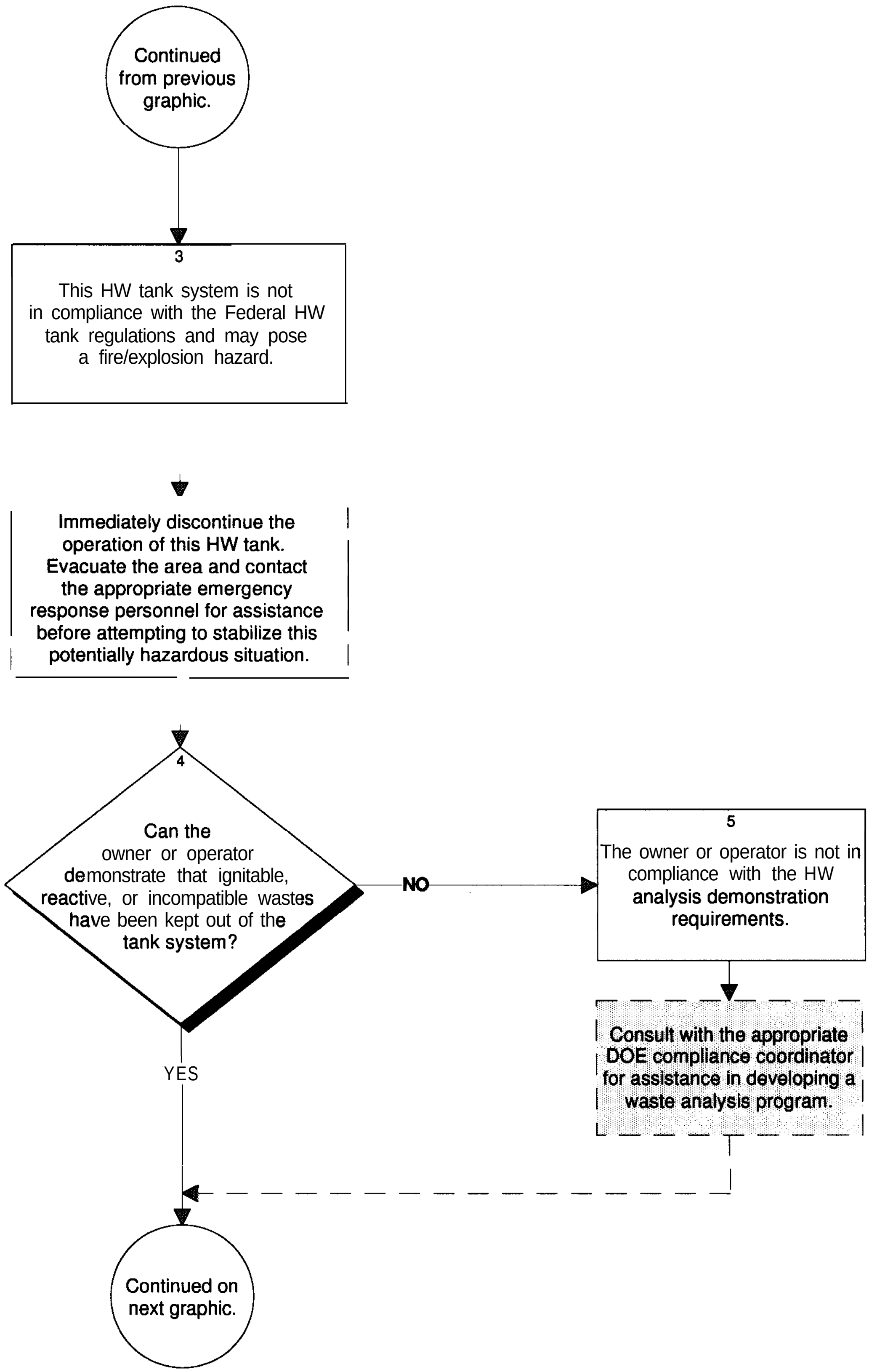
- The HW is treated or mixed before or immediately after placement in the tank system so that the resulting HW material no longer meets the definition of ignitable or reactive waste under 40 CFR 261.21 or 261.23, and the requirements of 40 CFR 264/265.17(b) for the owner/operator to take measures to prevent adverse reactions are met (see Chapter 1, Section 1.2, for the definition of ignitable or reactive waste);
- The HW is stored or treated in such a way that it is protected from any material or conditions that may cause the HW to ignite or react; or
- The tank system is used **solely** for emergencies.

The owner or operator of a facility where ignitable or reactive HW is stored or treated in a tank must maintain protective distances between the waste management area and any public ways, streets, alleys, or adjoining property lines that can be built upon. See Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code." [9]

As detailed in 40 CFR 264/265.199, incompatible HWs and/or materials must not be placed in the same tank system, and HW must not be placed in a tank system that has not been decontaminated if it previously held an incompatible HW or material, unless the requirements of 40 CFR 264/265.17(b) are met. (See the Glossary for the definition of "incompatible waste.")

Under 40 CFR 264/265.17(b), the owner or operator of a facility that treats or stores ignitable or reactive HW, or incompatible HW and other materials, must take precautions to prevent reactions that:

- Generate extreme heat or pressure, fire or explosions, or violent reactions, or produce uncontrolled toxic mists, fumes, dusts, or uncontrolled flammable fumes or gases in sufficient quantities to threaten human health or the environment;
- Damage the structural integrity of the device or facility; or
- Produce other sources of harm to human health or the environment.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3
This HW tank system is not in compliance with the Federal HW tank regulations and may pose a fire/explosion hazard.
Immediately discontinue the operation of this HW tank. Evacuate the area and contact the appropriate emergency response personnel for assistance before attempting to stabilize this potentially hazardous situation.
4
Can the owner or operator demonstrate that ignitable, reactive, or incompatible wastes have been kept out of the tank system?
NO
5
The owner or operator is not in compliance with the HW analysis demonstration requirements.
Consult with the appropriate DOE compliance coordinator for assistance in developing a waste analysis program.
YES
Continued on next graphic.

Step 3 40 CFR 264/265.17 requires that the owner or operator take precautions to prevent accidental ignition or reaction of ignitable or reactive HW. This HW must be separated and protected from sources of ignition or reaction including but not limited to open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat. While ignitable or reactive HW is being handled, the owner or operator must confine smoking and open flame to specially designated locations. "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive HW.

Step 4 Compliance with these requirements must be demonstrated by the owner or operator. This demonstration may be based on scientific or engineering literature, data from trial tests (e.g., bench scale or pilot scale tests), waste analyses as specified by 40 CFR 264/265.13, or the results of the treatment of similar HWs by similar treatment processes and under similar operating conditions. Specifically, the waste analysis plan for the on-site analysis of wastes must include, at a minimum:

- Parameters for which each waste will be analyzed;
- Test methods that will be used;
- Sampling methods; and
- Frequency with which the initial analysis of the waste will be reviewed or repeated.

40 CFR 264/265.13 requires the waste analysis plan to include analyses needed to comply with 40 CFR 265.198 and 199, as specified in Step 2.

Step 5 As detailed in 40 CFR 265.200 (for interim status facilities only), in addition to the requirements of 40 CFR 265.13, if the owner or operator plans to use a tank system to:

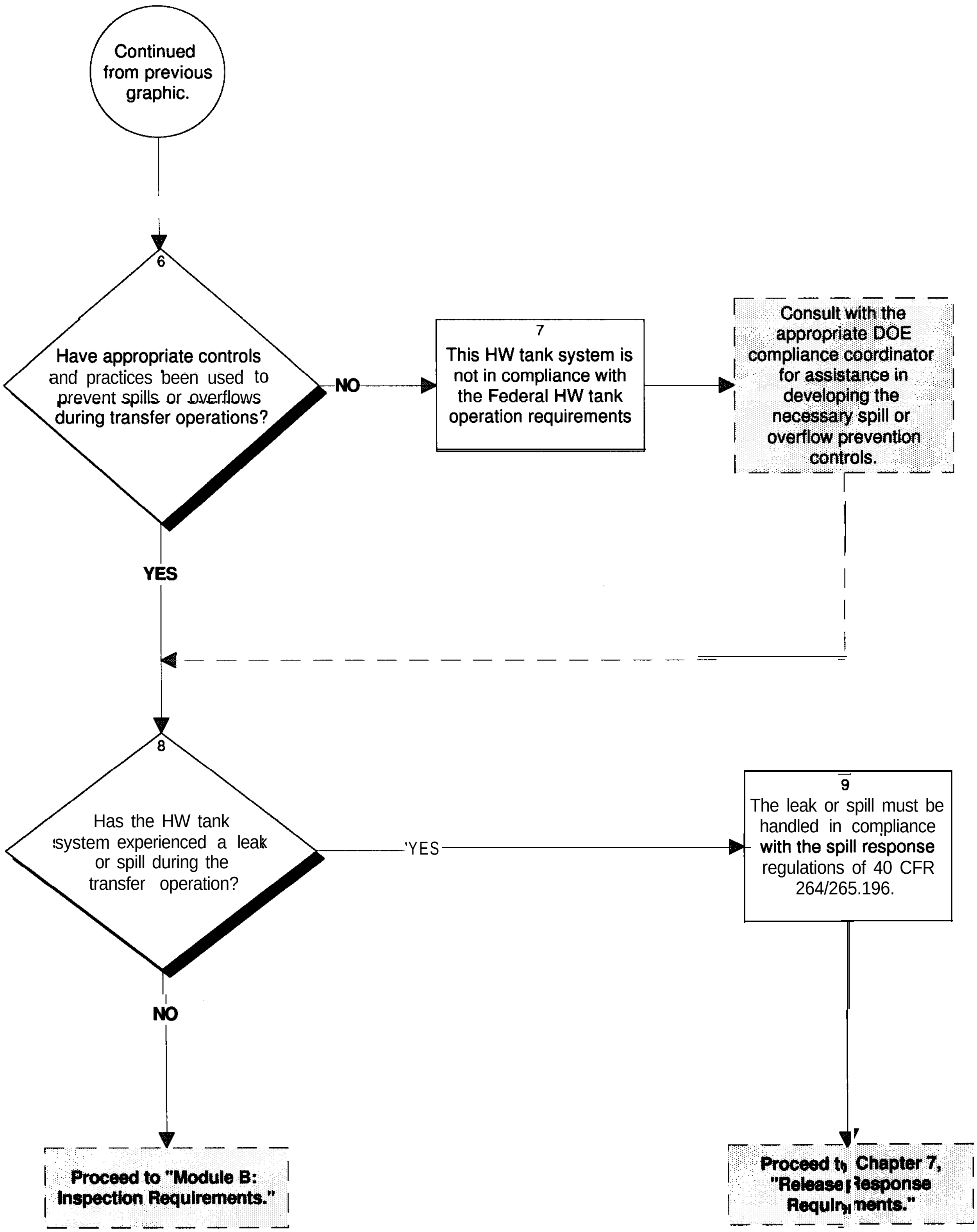
- Store or chemically treat a HW that is substantially different from waste previously treated or stored in that system; or
- Chemically treat a HW using a process that is substantially different from the processes previously used in that tank;

he/she must:

- Conduct waste analyses and trial treatment or storage tests (e.g., bench-scale or pilot-plant scale test); or
- Obtain written, documented information on similar waste under similar operating conditions

to show that the proposed treatment or storage will meet the general operating requirements of 40 CFR 265.194(a).

Note: 40 CFR 265.73 also requires the owner or operator to place the results from each waste analysis and trial test, or the documented information, in the facility's operating record.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6
Have appropriate controls and practices been used to prevent spills or overflows during transfer operations?
NO
7
This HW tank system is not in compliance with the Federal HW tank operation requirements
Consult with the appropriate DOE compliance coordinator for assistance in developing the necessary spill or overflow prevention controls.
YES
8
Has the HW tank system experienced a leak or spill during the transfer operation?
YES
9
The leak or spill must be handled in compliance with the spill response regulations of 40 CFR 264/265.196.
NO
Proceed to "Module B: Inspection Requirements."
Proceed to Chapter 7, "Release Response Requirements."

Step 6 The owner or operator must use appropriate controls to prevent spills and overflows from tanks or containment systems. These include at a minimum:

- Spill prevention controls (e.g., check valves, dry disconnect couplings);
- Overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank); and
- Maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave or wind action or by precipitation.

Following are **recommended** practices applicable to the safe transfer of any liquid HW.

- No one should remain in the tank vehicle or leave the vehicle unattended during the loading or unloading process; - the delivery hose is considered to be part of the tank vehicle during the loading/unloading process;
- Loading/unloading of tank vehicles should be done in approved locations;
- To minimize the possibility of fire or explosion when transferring ignitable liquids, motors of tank vehicles or auxiliary or portable pumps should be shut down during making or breaking hose connections and, if possible, throughout the transfer of the liquid;
- Cargo tanks containing volatile, flammable, or combustible liquid should not be fully loaded. Sufficient space, or outage, must be provided to prevent leakage due to thermal expansion of the transferred liquid. One percent is the minimum recommended outage requirement;
- Delivery of Class I liquids to underground tanks of more than 10,000 gallons (3,800 L) capacity must be made by means of tight connections between the hose and fill pipe;
- No flammable or combustible liquid shall be transferred to or from any tank vehicle unless the parking brake is set securely and all other precautions have been taken to prevent motion of the vehicle;
- To prevent the accidental mixing of incompatible HWs and other materials, place labels, markings, or color codes on hoses, or use special couplings for transferring certain wastes; and
- Periodic inspections of hoses should be considered for leaks. [4]

Step 7 Lack of compliance with the procedures discussed in this chapter may result in a leak or spill that could have otherwise been prevented.

Step 8 Leaks or spills during transfer operations require an **immediate** response, especially in the presence of ignitable or reactive HWs.

Step 9 The owner or operator must comply with the requirements of 40 CFR 264/265.196 if a leak or spill occurs in the tank system. See Chapter 8, "Release Response Requirements" for these requirements.

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6.3 Module B: Inspection Requirements

6.3.1 Introduction

The proper maintenance of leak- and corrosion-free HW tanks requires the implementation of a daily inspection program. Inspection programs should be capable of identifying structural deficiencies such as:

- Excessive corrosion;
- Deterioration of liners;
- Cracking of welds and joints;
- Cracking of concrete tanks and secondary containment systems;
- Structural fatigue as evidenced by the cracking of metals; and
- Leakage from pumps, valves, or piping. [40 CFR 264.195]

Inspectors should give special attention to rivet holes, welded seams and brackets, valves, and bypass piping. [1]

Inspections must be conducted daily to comply with the requirements for tank system inspections. Careful records of the findings of each inspection must be kept in the operating log.

Information on inspection schedules must be included in Part B of the permit application as required by 40 CFR 270.14(b)(5).

Note: In cases where tanks are holding radioactive mixed waste, the owner or operator may encounter difficulties in meeting daily inspection requirements [i.e., for reasons of worker protection]. In these cases, the owner/operator is encouraged to coordinate with EPA or the state to determine alternative or modified approaches to satisfy the inspection requirements.

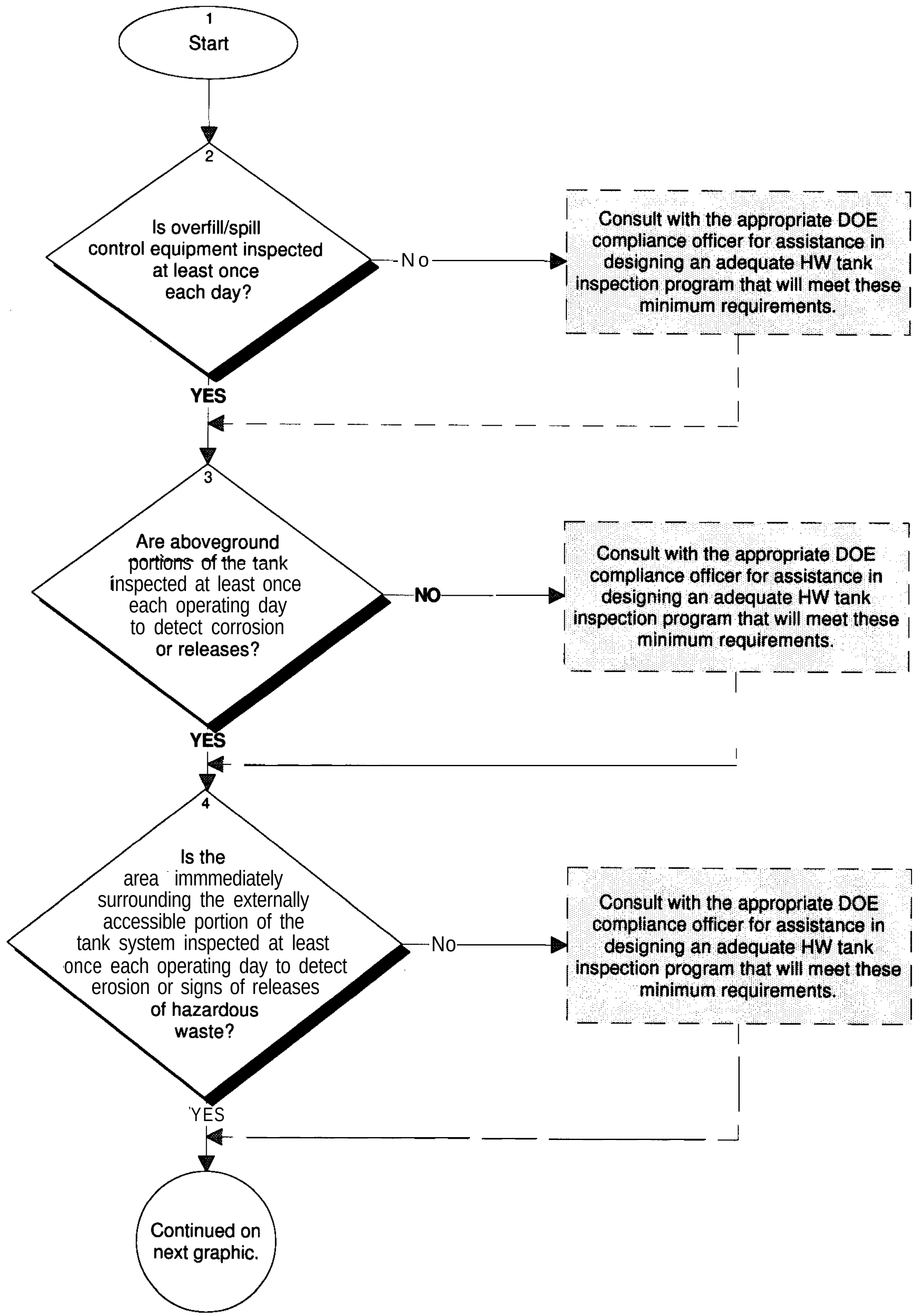
6.3.2 Milestones

Has an adequate inspection program been implemented?

- Many components of the HW tank system require inspection on a daily basis; and
- Proper documentation in the facility's inspection log is required.

The following flowchart details applicable inspection requirements.

Figure 6.2 Inspection Requirements



Step 1 Start

Step 2 The owner or operator must inspect overfill/spill control equipment (e.g., waste-feed cutoff systems, bypass systems, and drainage systems) daily to ensure that they are in good working order.

Important overfill controls and instruments include:

- Flow-rate controls;
- Level controls;
- Temperature gauges;
- Pressure gauges;
- Control valves; and
- Alarms and emergency shut off devices.

Elements that should be inspected include:

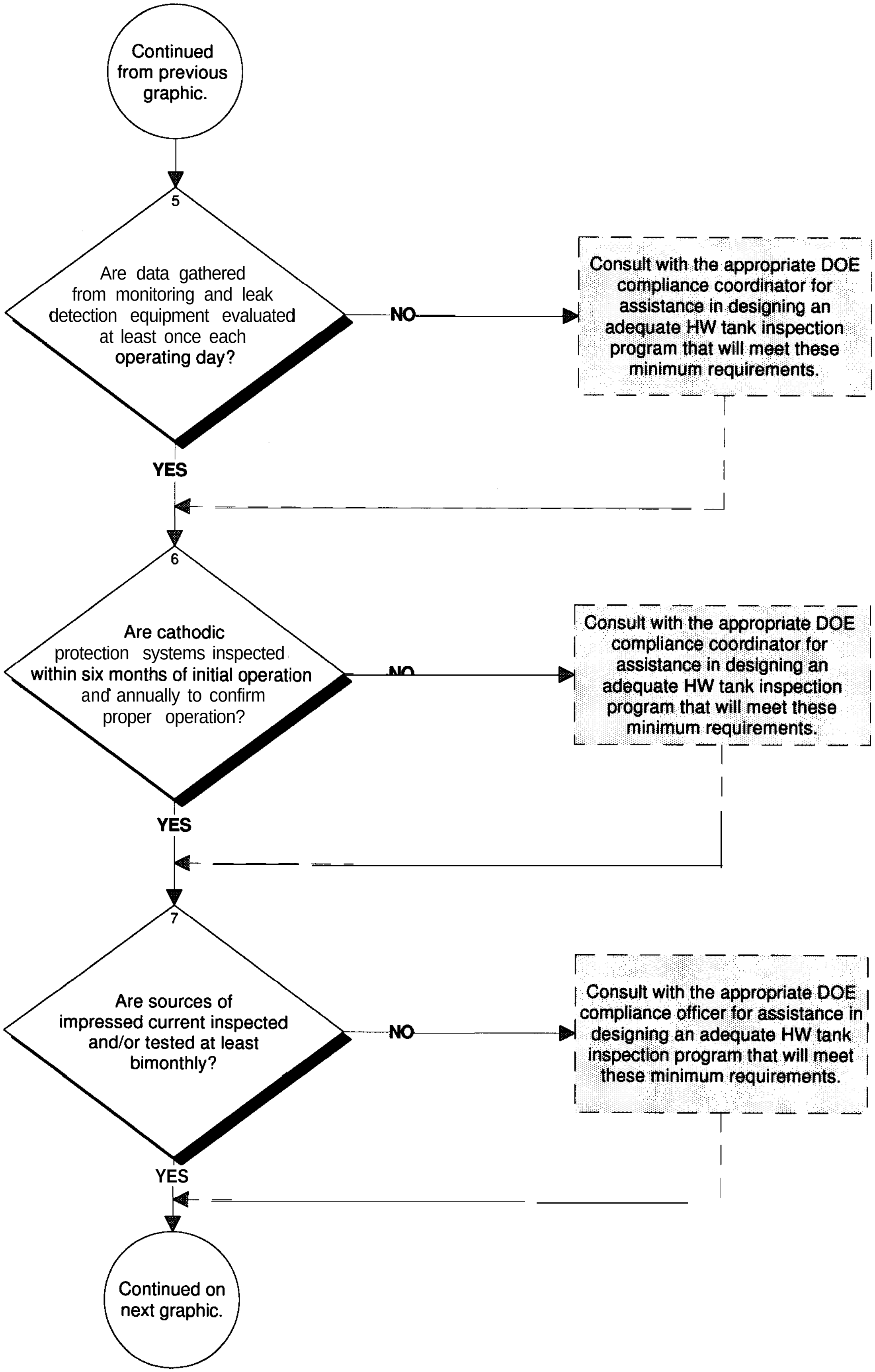
- Seals;
- Panels and enclosures;
- Operating mechanisms;
- Bearings;
- Electrical equipment; and
- Power supplies. [4]

Step 3 To detect corrosion or releases of HW, the owner or operator must inspect any aboveground portions of the tank system.

Step 4 The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes), must be inspected to detect erosion or signs of release of HW (e.g., wet spots, dead vegetation). Daily inspection should also include the following items:

- Releases or corrosion around nozzles and ancillary equipment of the tank system;
- Signs of corrosion on tank tops or roofs;
- Defective manhead gaskets;
- Buckles or cracks on seams and plates of the tank wall and bottom; and
- Deterioration of protective coatings as indicated by corrosion, blisters, discoloration, or film lifting. [4]

Figure 6.2: Inspection Requirements - continued



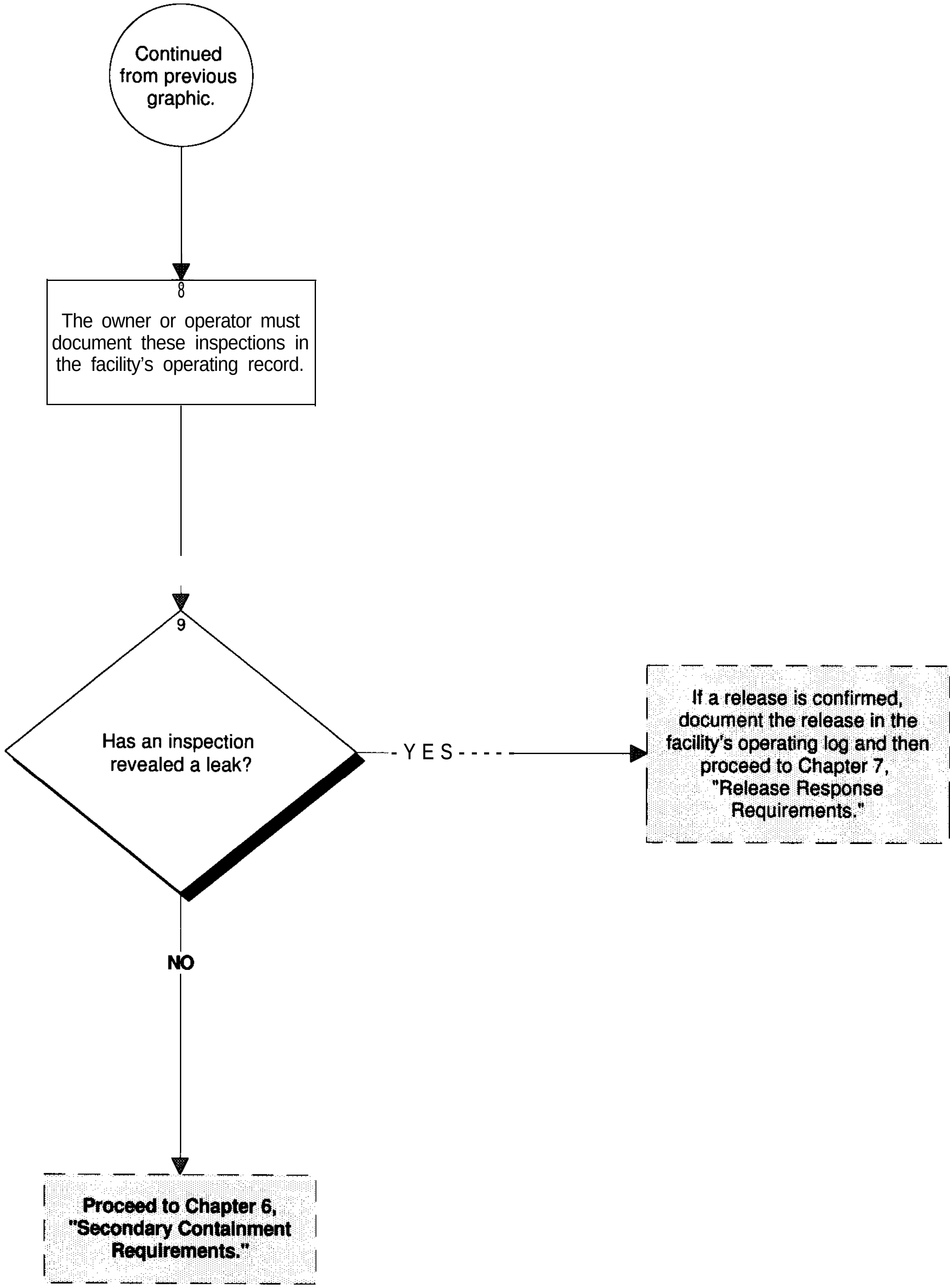
Step 5 Data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) must be analyzed to ensure that the HW tank system is being operated according to its design.

Note: 40 CFR 264.15(c) requires the owner or operator to remedy any deterioration or malfunction that is found. 40 CFR 264/265.196 requires the owner or operator to notify the Regional Administrator within 24 hours of confirming a leak. Also, 40 CFR Part 302 may require the owner or operator to notify the National Response Center of a release. See Chapter 8, "Release Response Requirements" for the requirements of 40 CFR 264/265.196.

Step 6 Cathodic protection systems must be checked for electrical continuity and for failure that may be caused by broken wires, broken or shorted insulators, or loss of coatings. Also, changes in soil resistivity, moisture content, seasonal changes, etc., can impact the effectiveness of cathodic protection.

Note: The practices described in the NACE standard, "Recommended Practice [RP-02-85]--Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the API Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in maintaining and inspecting cathodic protection systems. [6], [7]

Step 7 Impressed current is a means for providing cathodic protection by utilizing the alternating current (AC) electrical power provided at a site. The AC is converted to direct current (DC) by a rectifier attached to the AC power source. The DC output from the rectifier flows from the buried impressed current anode(s) through the soil and to the tank. Impressed current anodes are usually composed of such materials as graphite, high-silicon cast iron, platinum, magnetite, or steel. Malfunctions usually occur because of power interruptions, improper operation of rectifiers, damage to insulation, deterioration of anodes, or broken wires. [4]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8
The owner or operator must document these inspections in the facility's operating record.
9
Has an inspection revealed a leak?
YES
If a release is confirmed, document the release in the facility's operating log and then proceed to Chapter 7, "Release Response Requirements."
NO
Proceed to Chapter 6, "Secondary Containment Requirements."

Step 8 The owner or operator must document all inspections in the operating record of the facility. The maintenance of up-to-date, legible, permanent records are vital for providing proof of compliance with the inspection requirements of 40 CFR 264/265.195.

Step 9 The owner or operator must take immediate steps to contain and clean-up the spill. Chapter 7 presents applicable release response and reporting requirements.

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Chapter 7
Secondary Containment Requirements

Contents

7.1 Introduction

7.1.1 Background

EPA has determined that secondary containment with **interstitial** monitoring (monitoring of the space between the inner tank and the outer shell for the presence of HW that has leaked or spilled) is the only proven technique for guarding against releases to the environment. Secondary containment allows for the detection of releases from the inner tank while providing a barrier that contains releases before they can escape into the environment. Therefore, EPA requires that all HW tank systems must have secondary containment with interstitial monitoring installed or retrofitted within a specific period of time unless they have been exempted.

Exempted tank systems are those that:

- Are used to store or treat HW that contains no free liquid **and** are situated inside a building with an impermeable floor; or
- Serve as part of a secondary containment system (including sumps). [40 CFR 264/265.190(a), (b)]

Note: To demonstrate the absence of free liquids in the stored/treated waste, EPA Method 9095 [Paint Filter Liquids Test] as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" [EPA Publication No. SW-846F] must be used. [10]

New HW tanks must be provided with secondary containment before operation of the tank is begun. For existing tank systems, secondary containment with interstitial monitoring can be phased in.

An existing tank that is determined to be non-leaking on the basis of tank integrity assessments or other means must be provided with secondary containment by the time it is 15 years old, at the latest. Periodic tank system integrity assessments are required for all tanks not fitted with secondary containment.

If a leak is discovered (through the tank integrity assessment or otherwise) in any component of the existing tank system (i.e., tank vessel or ancillary equipment) that is located underground, that tank system component must be provided with secondary containment before the tank system is returned to service. Additionally, if a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection (e.g., the bottom of an on-ground tank), the component must be provided with secondary containment prior to returning the tank system to service. See Chapter 8, "Release Response Requirements," for these requirements.

If the owner or operator desires, he/she may obtain a variance from the secondary containment requirements. Variance requirements are addressed in "Module B: Secondary Containment: Variance Requirements." If a HW tank that has received a variance leaks, the owner or operator must follow specific leak response requirements. Those requirements are discussed in "Module C: Responding to Releases From HW Tanks that have Received a Variance."

7.1.2 Major Requirements

- **Module A: Secondary Containment Requirements.**
  This module describes the minimum requirements that secondary containment systems must meet to comply with the regulations.
- **Module B: Secondary Containment: Variance Requirements.**
  This module describes the requirements that must be met by an owner or operator who wishes to obtain a variance from the secondary containment requirements.
- **Module C: Responding to Releases From HW Tanks that have Received a Variance.**
  This module describes the release response requirements that must be met by owners or operators of HW tank systems that have received a variance from the secondary containment requirements.

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7.2 Module A: Secondary Containment Requirements

7.2.1 Introduction

The types of secondary containment systems that are acceptable under 40 CFR 264/265.193 are liners (external to the tank), vaults, double-walled tanks, concrete bases with diking, and equivalent systems as approved by a Regional Administrator of the EPA. Secondary containment systems are designed to temporarily contain any released waste.

Secondary containment systems can be constructed using a variety of materials. Liners are typically constructed of low-permeability natural material (such as clay) or a synthetic membrane (such as polyvinyl chloride). Vaults are generally constructed of concrete and lined with a nonporous coating, and usually are engineered to allow inspection of the enclosed tank for leaks.

Before the form of secondary containment is chosen, the chemical and physical characteristics of the HW must be known. The HW must be compatible with the material chosen for the construction of the secondary containment structure, otherwise leakage through the secondary containment may result.

7.2.2 Milestones

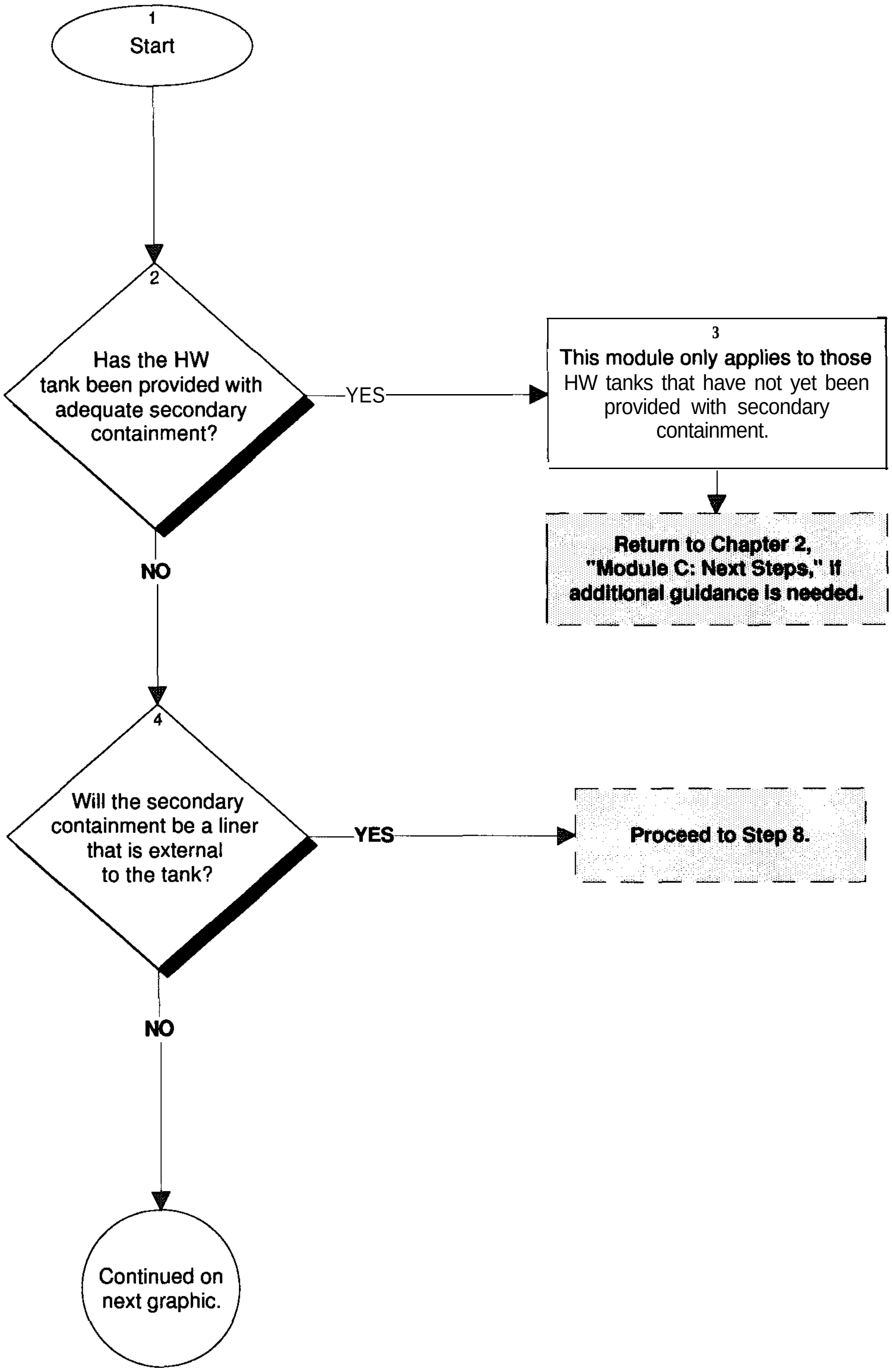
Does the HW tank have adequate secondary containment?

The secondary containment chosen for the HW tank must be:

- One listed in 40 CFR 264/265.193; or
- An equivalent device approved by a Regional Administrator of the EPA.

The following module provides the design and installation requirements for secondary containment systems.

Figure 7.1: Secondary Containment Requirements



Step 1 Start

Step 2 Secondary containment systems must be:

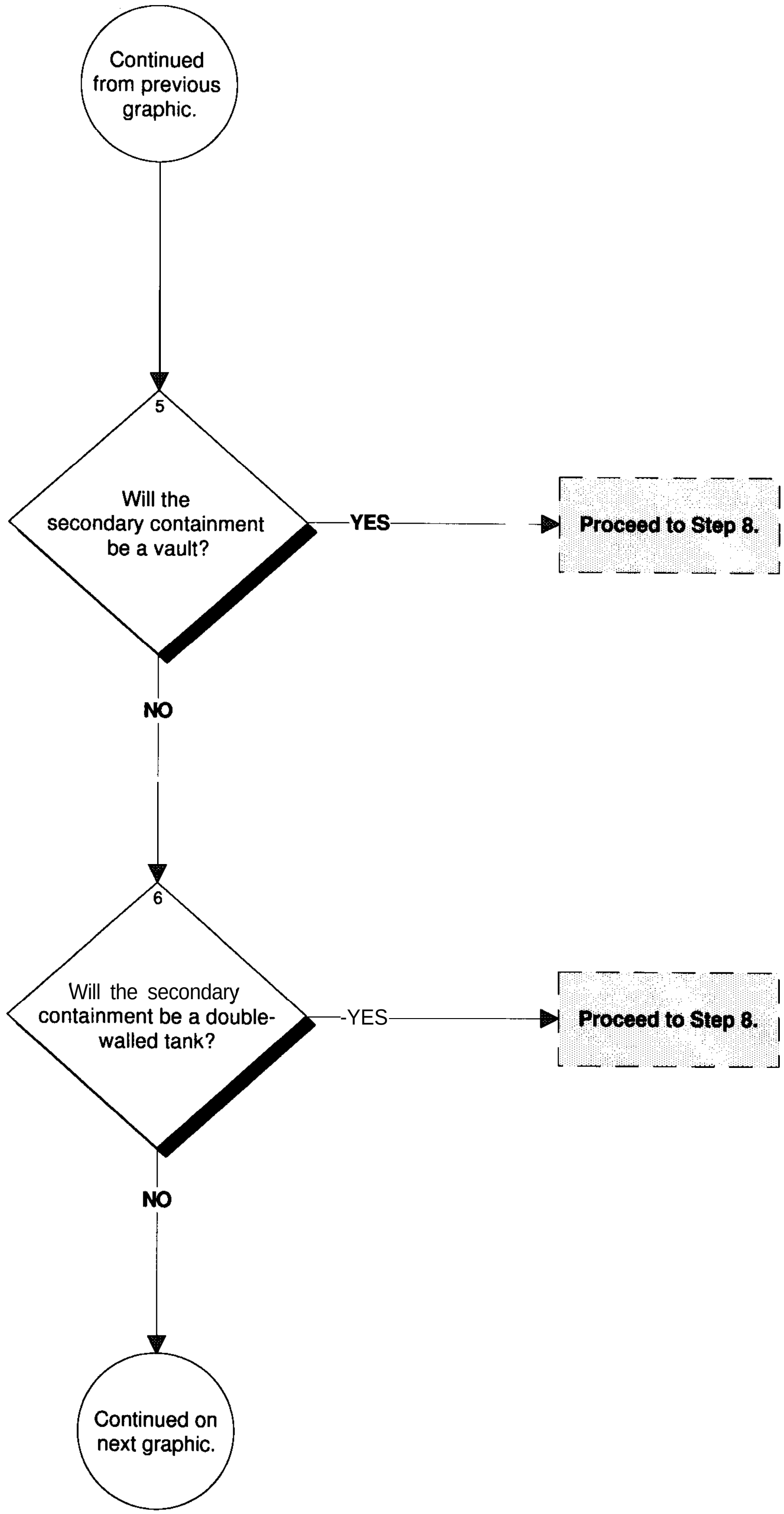
- Designed, installed, and operated to prevent any migration of HWs or accumulated liquid out of the system to the soil, groundwater, or surface water at any time during the use of the tank system; and
- Capable of detecting and collecting releases and accumulated liquids until the collected material is removed.

Note: If the material collected in a secondary containment structure is a HW under 40 CFR Part 261 [Identification and Listing of HW], it is subject to all applicable requirements of 40 CFR Parts 261, 262, 263 through 265. If discharged through a point source to waters of the U.S., it is subject to Sections 301, 304, and 402 of the Clean Water Act, or Section 302 if it is a Publicly Owned Treatment Works [POTW]. If the HW is released to the environment, 40 CFR Part 302 may require the owner or operator to report the incident to the National Response Center [NRC].

Step 3 If the HW tank has already been provided with secondary containment that complies with the requirements listed above in Step 2, this chapter does not apply. If, however, the secondary containment is found to be **inadequate** or is being constructed as part of a **new** tank system, this chapter **is** applicable.

Step 4 External liner systems must be:

- Free of gaps and cracks, and designed to contain 100 percent of the capacity of the largest tank within its boundary;
- Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration from a 25-year, 24-hour rainfall event; and
- Designed and installed to surround the tank completely and to cover all surrounding earth likely to contact the HW as a result of a release (i.e., it must be capable of preventing lateral as well as vertical migration of the HW).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5
Will the secondary containment be a vault?
YES
Proceed to Step 8.
NO
6
Will the secondary containment be a double-walled tank?
YES
Proceed to Step 8.
NO
Continued on next graphic.

Step 5 Vault systems must be:

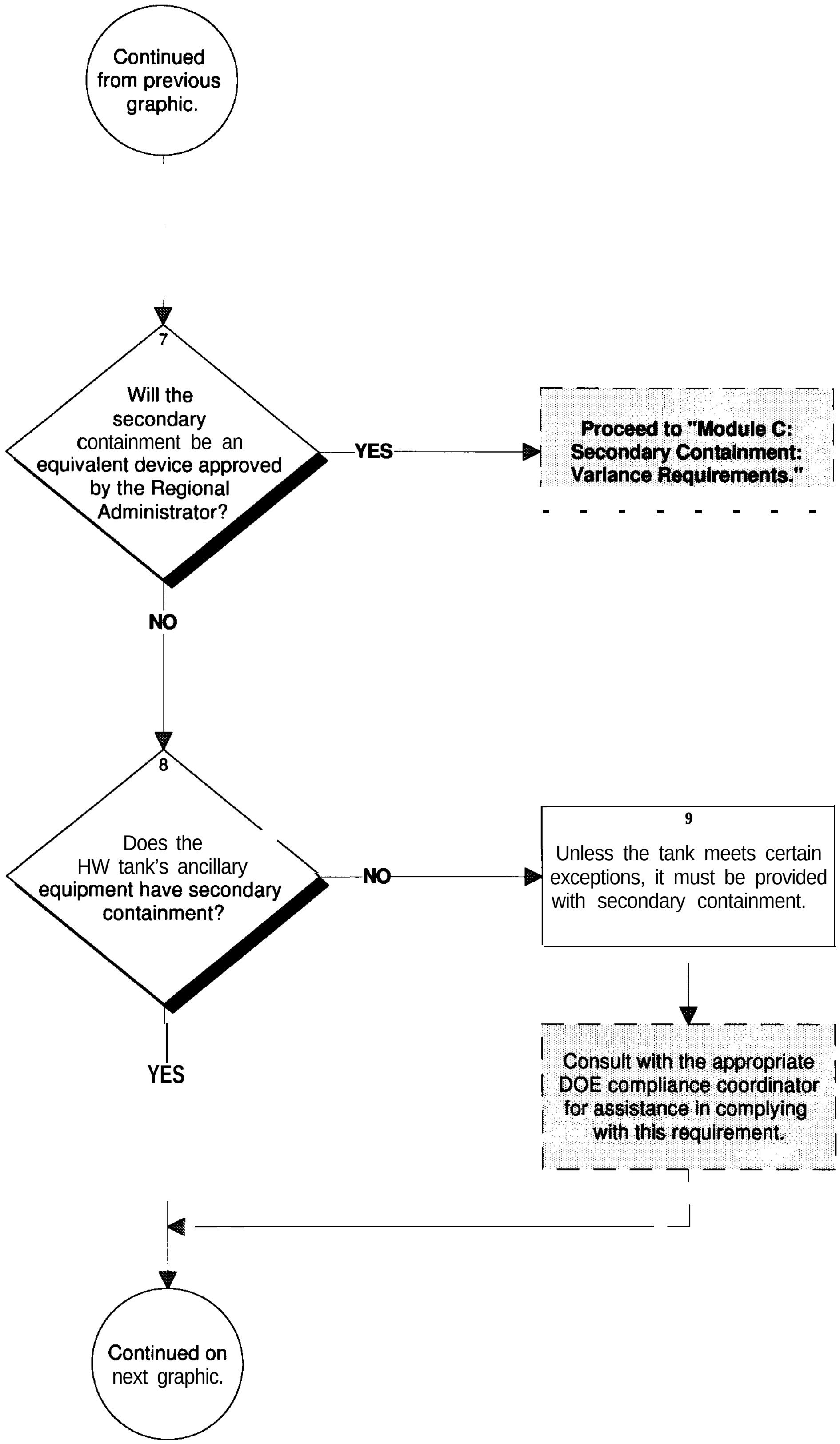
- Designed or operated to contain 100 percent of the capacity of the largest tank within its boundary;
- Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration from a 25-year, 24-hour rainfall event;
- Provided with chemical-resistant water stops at all joints;
- Provided with an impermeable interior coating or lining that is compatible with the stored HW and that will prevent migration of HW into the concrete;
- Provided with a means to protect against the formation and ignition of vapors within the vault, if the HW being stored or treated meets the definition of ignitable or reactive waste and may form an ignitable or explosive vapor (see Chapter 1, Section 1.2, for the definitions of ignitable or reactive waste.); and
- Provided with an exterior moisture barrier or be otherwise designed or operated to prevent migration of moisture into the vault if the vault is subject to hydraulic pressure.

HW and accumulated liquids must be prevented from reaching the soil, groundwater, or surface water at any time during the use of the tank system.

Step 6 Double-walled tanks must be:

- Designed as an integral structure (i.e., an inner tank completely enveloped within an outer shell) so that any release from the inner tank is contained by the outer shell;
- Protected (if constructed of metal) from both corrosion of the primary tank interior and of the external surface of the outer shell; and
- Provided with a built-in, continuous, leak detection system capable of detecting a release within 24 hours (or at the earliest practicable time, if the owner or operator demonstrates and if the Regional Administrator concludes that the existing detection technology or site conditions would not allow detection of a release within 24 hours).

Note: The Steel Tank Institute's [STI] "Standard for Dual Wall Underground Steel Storage Tanks" may be used to supply guidelines for aspects of the design of underground, steel, double-walled tanks. [11]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7
Will the secondary containment be an equivalent device approved by the Regional Administrator?
YES
Proceed to "Module C: Secondary Containment: Variance Requirements."
NO
8
Does the HW tank's ancillary equipment have secondary containment?
NO
9
Unless the tank meets certain exceptions, it must be provided with secondary containment.
Consult with the appropriate DOE compliance coordinator for assistance in complying with this requirement.
YES
Continued on next graphic.

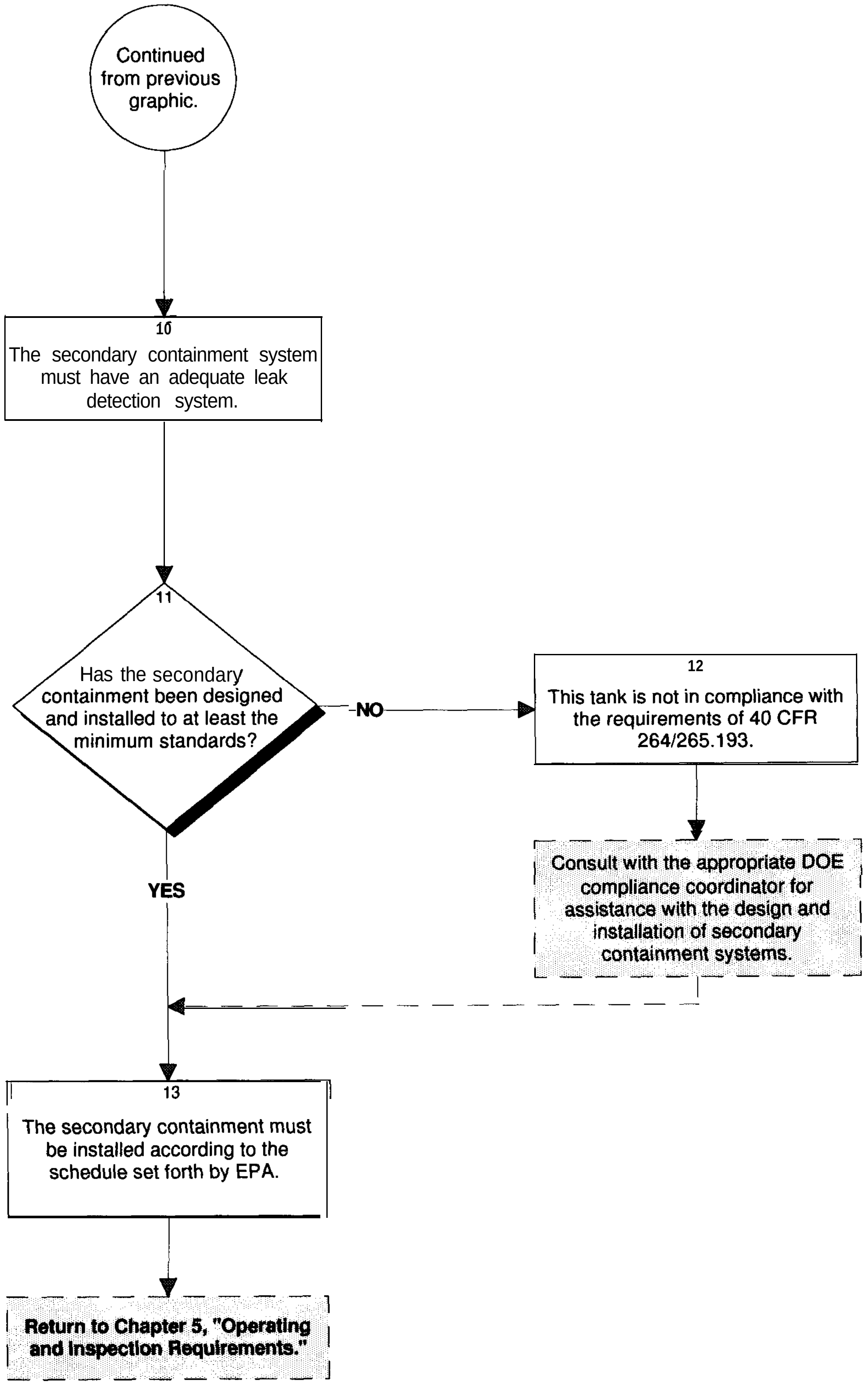
Step 7 The Regional Administrator of the EPA must find, as the result of a demonstration, that alternative design and operating practices, together with location characteristics, will prevent the migration of any HW or hazardous constituents into groundwater or surface water, or, if a release does migrate to groundwater or surface water, that no substantial present or potential hazards will be created. See "Module B: Secondary Containment: Variance Requirements," for further details.

Step 8 Ancillary equipment must be provided with secondary containment (e.g., trench, jacketing, double-walled piping) that meets the requirements of Steps 2, 10, and 11 of this module.

Step 9 In addition to the inspection requirements described here, see Chapter 6, "Module B: Inspection Requirements," for further information pertaining to the inspection of ancillary equipment.

The ancillary equipment listed below does not require secondary containment if it is visually inspected for leaks on a **daily** basis:

- Aboveground piping (exclusive of flanges, joints, valves, and other connections);
- Welded flanges, welded joints, and welded connections;
- Seal-less or magnetic coupling pumps and seal-less valves; and
- Pressurized aboveground piping systems with automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss-of-pressure actuated shut-off devices).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10
The secondary containment system must have an adequate leak detection system.
11
Has the secondary containment been designed and installed to at least the minimum standards?
NO
12
This tank is not in compliance with the requirements of 40 CFR 264/265.193.
Consult with the appropriate DOE compliance coordinator for assistance with the design and installation of secondary containment systems.
YES
13
The secondary containment must be installed according to the schedule set forth by EPA.
Return to Chapter 5, "Operating and Inspection Requirements."

Step 10 The leak-detection system must be able to detect the failure of either the primary or secondary containment structure, or the presence of any release of HW or accumulated liquid in the secondary containment system, within 24 hours (or at the earliest time if the owner or operator can demonstrate to the Regional Administrator that existing detection technologies or site conditions will not allow detection of a release within 24 hours).

Step 11 Secondary containment systems must be at a minimum:

- Constructed of, or lined with, materials that are compatible with the HW to be placed in the tank system and of sufficient strength and thickness to prevent failure owing to pressure gradients (including static head and external hydrological forces), physical contact with the waste to which it is exposed, climatic conditions, or the stress of daily operation (including stresses from nearby vehicular traffic);
- Placed on a foundation or base that can support the secondary containment system; provide resistance due to pressure gradients above and below the system, prevent failure from settlement, compression, or uplift; and
- Sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation (removal of such material from the secondary containment system must be accomplished within 24 hours [or as soon as possible to prevent harm to human health and the environment if the owner or operator can demonstrate to the Regional Administrator of the EPA that removal of the released HW or accumulated precipitation cannot be accomplished within 24 hours]).

Step 12 A secondary containment system not designed to these standards may not be capable of containing spilled or leaked HW.

Step 13 Installation schedules vary as follows for new and existing tanks:

- **New tank systems** must be provided with secondary containment prior to being placed into service;
- All **existing tank systems** used to store or treat EPA HW Nos. F020, F021, F022, F023, F026, and F027 must have received secondary containment by January 12, 1989;
- For existing tank systems of known and documented age, secondary containment must have been provided by January 12, 1989, or when the tank system has reached 15 years of age, if that date is later;
- For existing tank systems for which the age cannot be documented, secondary containment must be provided by January 12, 1995, but if the age of the **facility** is greater than 7 years, secondary containment must be provided by the time the facility reaches 15 years of age, or by January 12, 1989, whichever comes later; and
- For tank systems that store or treat materials that become HWs subsequent to January 17, 1987, secondary containment must be provided by the time intervals specified above, except that the date that a material becomes a HW must be used in place of January 17, 1987.

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7.3 Module B: Secondary Containment: Variance Requirements

7.3.1 Introduction

As discussed in Section 7.2, "Module A: Secondary Containment Requirements," EPA designates three types of secondary containment acceptable for use with HW tanks. However, if owners or operators wish to employ a different design, they may do so upon approval of a Regional Administrator of the EPA. There are two types of variances that an owner or operator can obtain: one is based on technology, the other is based on risk.

Technology-Based Variance

The owner or operator may demonstrate to the Regional Administrator that a particular alternative design and operating practice, together with location characteristics, will prevent migration of any HW or hazardous constituents into groundwater and/or surface water throughout the active life of the HW tank system as effectively as secondary containment with leak detection. This is the "technology-based variance." This variance provision recognizes that the combination of certain site-specific and waste-specific characteristics may physically prevent the movement of hazardous constituents into groundwater and surface water.

Risk-Based Variance

Instead of the technology-based variance, the owner or operator may choose to obtain a "risk-based variance." This variance is based on a demonstration that the HW released from a tank system will pose no substantial present or potential harm to human health or the environment. New underground tank systems are **precluded** from obtaining a risk-based variance because of a provision in HSWA Section 3004(o)(4)(A) that requires all new underground tanks to use a leak detection system. EPA has concluded that secondary containment is the only generally applicable mechanism that will allow detection and response to releases from HW tank systems.

7.3.2 Milestones

Does the owner or operator wish to obtain a variance from the secondary containment requirements? To obtain a variance, the owner or operator must be able to demonstrate to a Regional Administrator of the EPA that the alternative design will: • Prevent the migration of any HW into the groundwater and/or surface water at least as effectively as secondary containment; or • Assure that a release of HW to groundwater and/or surface water would not pose a substantial present or potential hazard to human health or the environment.

The following module describes the requirements for obtaining either a risk-based or technology-based variance.

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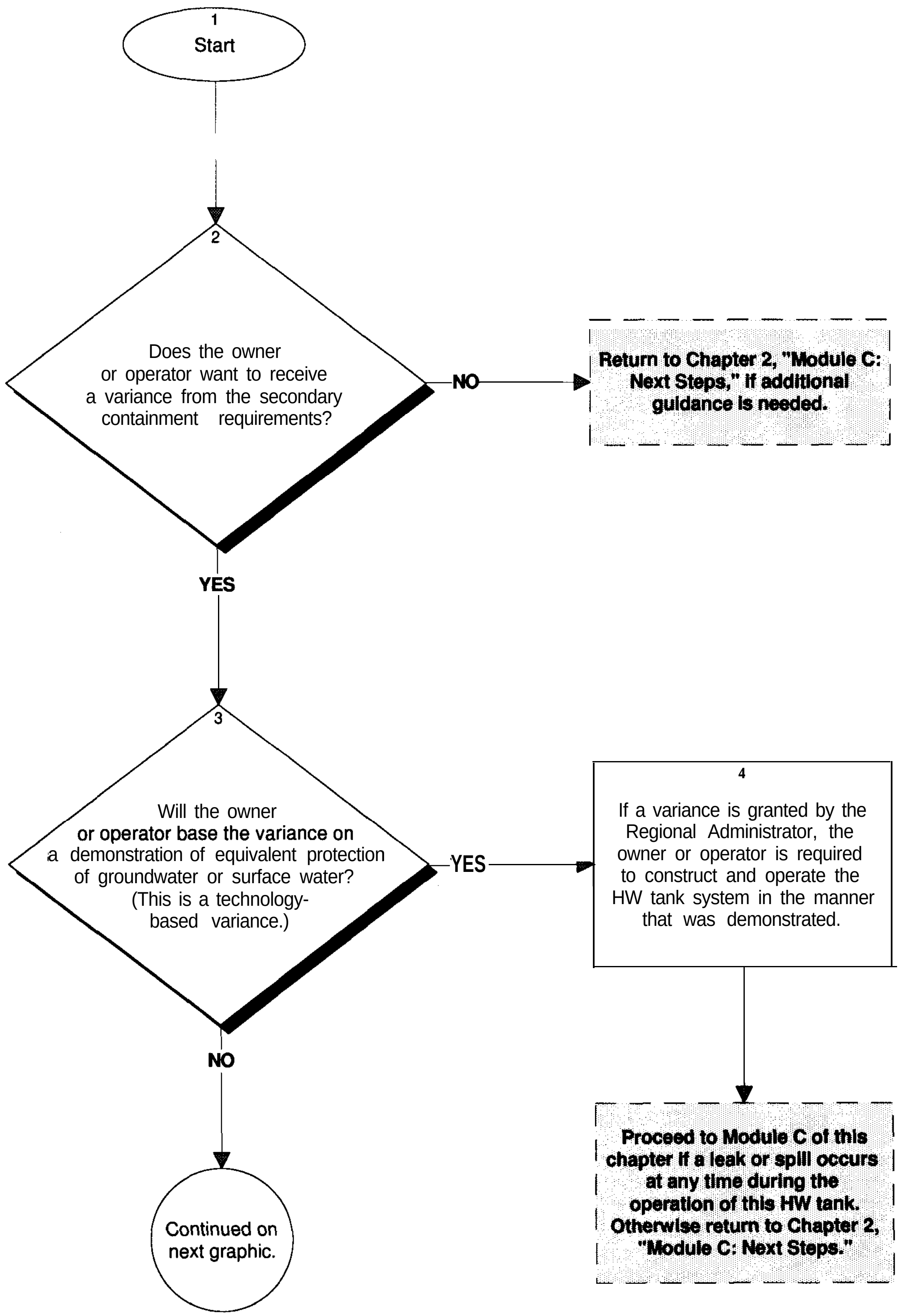
Figure 7.2: Secondary Containment: Variance Requirements



Step 1 Start

Step 2 The owner or operator may obtain a variance from the secondary containment requirements if the Regional Administrator of the EPA finds:

- As a result of a demonstration by the owner or operator that the proposed alternative design and operating practices, together with location characteristics, will prevent the migration of any HW or hazardous constituents into the groundwater or surface water at least as effectively as secondary containment during the active life of the tank system; **or**
- That in the event of a release that does migrate to groundwater or surface water, no substantial present or potential hazard will be posed to human health or the environment.

The Regional Administrator must be notified of the variance request in writing according to the following schedule:

- For existing tank systems, at least **24 months prior** to the date that secondary containment must be provided in accordance with Chapter 7, "Module A: Secondary Containment Requirements," Step 13; and
- For new tank systems, at least **30 days prior** to entering into a contract for installation.

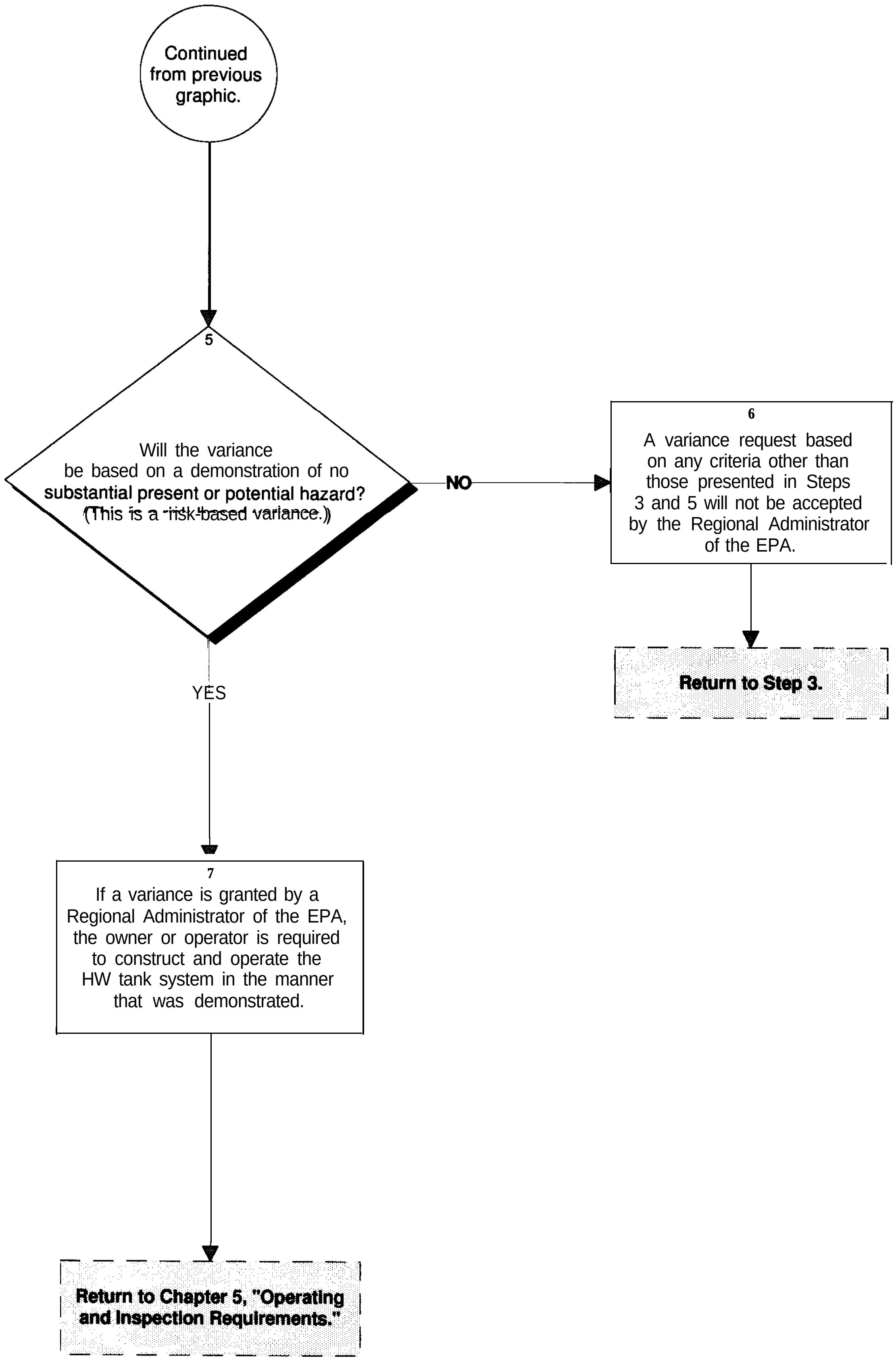
As part of the notification, the owner or operator must also submit a description of the steps and a timetable necessary to conduct one of the two demonstrations. The demonstration must be completed within 180 days after notifying the Regional Administrator of an intent to conduct the demonstration.

Step 3 In deciding whether to grant a variance based on a demonstration of **equivalent protection of groundwater and/or surface water** (a technology-based variance), the Regional Administrator of the EPA will consider these four factors:

- The nature and quantity of the wastes;
- The proposed alternative design and operation;
- The hydrogeologic setting of the facility, including the thickness of soils present between the tank system and groundwater; and
- All other factors that would influence the quality and mobility of the hazardous constituents and the potential for them to migrate to groundwater or surface water.

Step 4 Construction and/or operation in a manner other than what was demonstrated will remove the HW tank from compliance.

Figure 7.2: Secondary Containment: Variance Requirements - continued



Step 5 Note: New underground tank systems **may not** be exempted from the secondary containment requirements by a demonstration of no substantial present or potential hazard.

In deciding whether to grant a variance based on a demonstration of **no substantial present or potential hazard** (a risk-based variance), the Regional Administrator of the EPA will consider all of the following effects:

- The potential adverse effects on **groundwater**, **surface water**, and **land** quality taking into account:
  - The physical and chemical characteristics of the waste in the tank system, including its potential for migration;
  - The hydrogeological characteristics of the facility and surrounding land;
  - The potential for health risks caused by human exposure to waste constituents;
  - The potential for damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and
  - The persistence and permanence of the potential adverse effects;
- The potential adverse effects of a release on **groundwater** quality, taking into account:
  - The quantity and quality of groundwater and the direction of groundwater flow;
  - The proximity and withdrawal rates of groundwater users;
  - The current and future uses of area groundwater; and
  - The existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;
- The potential adverse effects of a release on **surface water** quality, taking into account:
  - The quantity and quality of surface water and the direction of surface water flow;
  - The patterns of rainfall in the region;
  - The proximity of the tank system to surface waters;
  - The current and future uses of surface waters in the area and any water quality standards established for those surface waters; and
  - The existing quality of surface water, including other sources of contamination and the cumulative impact on surface-water quality; and
- The potential adverse effects of a release on the **land** surrounding the tank system, taking into account the patterns of rainfall in the region, and the current and future uses of the surrounding land.

Step 6 Step 3 contains the requirements for a technology-based variance; Step 5 contains the requirements for a risk-based variance.

Step 7 Operation in a manner other than what was demonstrated will remove the HW tank from compliance.

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7.4 Module C: Responding to Releases From HW Tanks that have Received a Variance

7.4.1 Introduction

If a HW tank that has received a variance experiences a leak, it must be removed from service and repaired or replaced before being put back into service.

The regulations contained in 40 CFR 264/265.193(g)(3) specify requirements that must be followed by owners or operators of HW tanks that have received a technology-based variance.

Owners and operators of HW tanks that have received a risk-based variance must follow all of the applicable requirements found in 40 CFR 264/265.196. See Chapter 8, "Module A: Response to Leaks or Spills," and "Module B: Release Reporting."

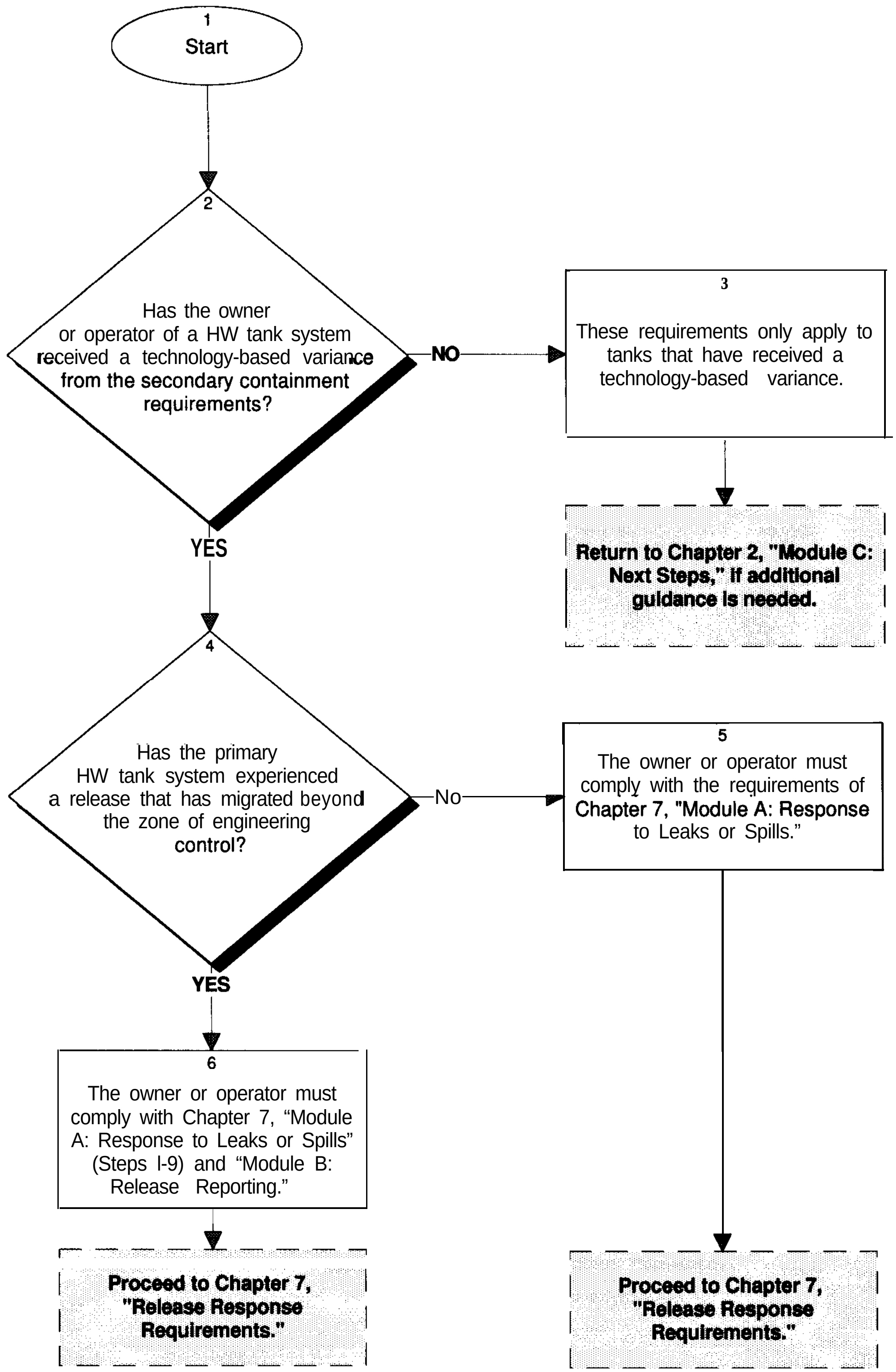
7.4.2 Milestones

Has a release occurred from a HW tank for which a variance has been granted?

- If the variance is **technology-based**, the owner or operator must determine whether or not the release has migrated beyond the zone of engineering control before formulating a response to the release; or
- If the variance is **risk-based**, the owner or operator does not have to make the same release-migration determination as described above. Instead, the owner or operator should proceed to Chapter 8, "Module A: Response to Leaks or Spills," before formulating a response to the release.

The following module identifies the requirements that must be met to properly respond to releases or spills from HW tanks that have received a technology-based variance from the secondary containment requirements.

Figure 7.3: Responding to Releases from HW Tanks That Have Received a Variance



Step 1 Start

Step 2 Return to Module B of this chapter to review the requirements for a technology-based variance.

Step 3 HW tanks that have received a **risk-based variance** must comply with **all** of the release response requirements of 40 CFR 264/265.196. These requirements are presented in Chapter 8, Modules A and B.

Step 4 The zone of engineering control is defined in the permit.

Step 5 The owner or operator must meet all of the release response requirements of 40 CFR 264/265.196 except the notification requirements. Also, contaminated soil must be decontaminated or removed to the extent necessary to:

- Enable the tank system for which the variance was granted to resume operation with release detection capability at least equivalent to the capability it had prior to the release;
- Prevent the migration of HW or hazardous constituents to groundwater or surface water; and
- Comply with the requirement of 40 CFR 264/265.197(b) (Closure and Post-Closure Care) if contaminated soil cannot be removed or decontaminated. These requirements are found in Chapter 10, "Module B: HW Tanks Closing in the Same Manner as HW Landfills."

Step 6 The owner or operator must comply with the release response requirements of 40 CFR 264/265.196(a), (b), (c), and (d). These requirements can be found in Chapter 8.

The owner or operator must prevent the migration of HW or hazardous constituents to groundwater or surface water and decontaminate or remove contaminated soil. If contaminated soil cannot be decontaminated or removed or if groundwater has been contaminated, the owner or operator must comply with the closure requirements of 40 CFR 264/265.197(b) found in Module B of Chapter 10.

Also, if repairing, replacing, or reinstalling the tank system, the owner or operator must provide secondary containment in accordance with the requirements found in this chapter's "Module A: Secondary Containment Requirements" or reapply for a variance from secondary containment. The requirements for new tank systems found in Chapter 4, "Module A: Design, Installation, and Assessment of New HW Tank Systems or Components," must be met if the tank system is replaced. The owner or operator must comply with these requirements even if contaminated soil can be decontaminated or removed and groundwater or surface water has not been contaminated.

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Chapter 8
Release Response Requirements

Contents

8.1 Introduction

8.1.1 Background

Leaks or spills from HW tank systems can be caused by faults, corrosion, structural failure of the tank and ancillary equipment, errors in the initial installation, and operator error. Leaks can develop slowly, over time, as in the case of corrosion or structural failure. Spills, however, can occur rapidly, often due to operator error or to equipment failure.

After a leak or spill has been confirmed, the owner or operator must respond quickly to clean up the hazardous waste and any contaminated soil or debris, and to repair or replace the tank. The owner or operator must also notify the proper authorities and provide a written report of the incident.

8.1.2 Major Requirements

This chapter contains two modules: one details cleanup, repair, and/or replacement requirements; the other specifies applicable reporting requirements.

- **Module A: Response to Leaks or Spills.** This module provides cleanup, repair, and replacement requirements for HW tanks where a release has occurred. It also notes closure requirements found in Chapter 10 that may be necessary in some release-related circumstances.
- **Module B: Release Reporting.** This module describes the procedure for notifying the proper authorities in the event of a release of HW. Depending upon the severity of the event, notification must be made either to the National Response Center (NRC) or to the EPA Regional Administrator. In addition to EPA requirements, there are a number of DOE Orders that contain additional reporting requirements. These DOE Orders are listed in the introduction to Module B.

8.2 Module A: Response to Leaks or Spills

8.2.1 Introduction

HW tanks from which a leak or spill has occurred must be removed from service immediately and the spill must be cleaned up as quickly as possible. The flow of HW must be contained to minimize the extent of the remediation that will be necessary as a result of the spill. The cleanup activities must be conducted in a manner that will safeguard the health of the employees involved and minimize the damage done to the local environment. Extreme care will be necessary in the presence of ignitable, reactive, or radioactive HW.

8.2.2 Milestones

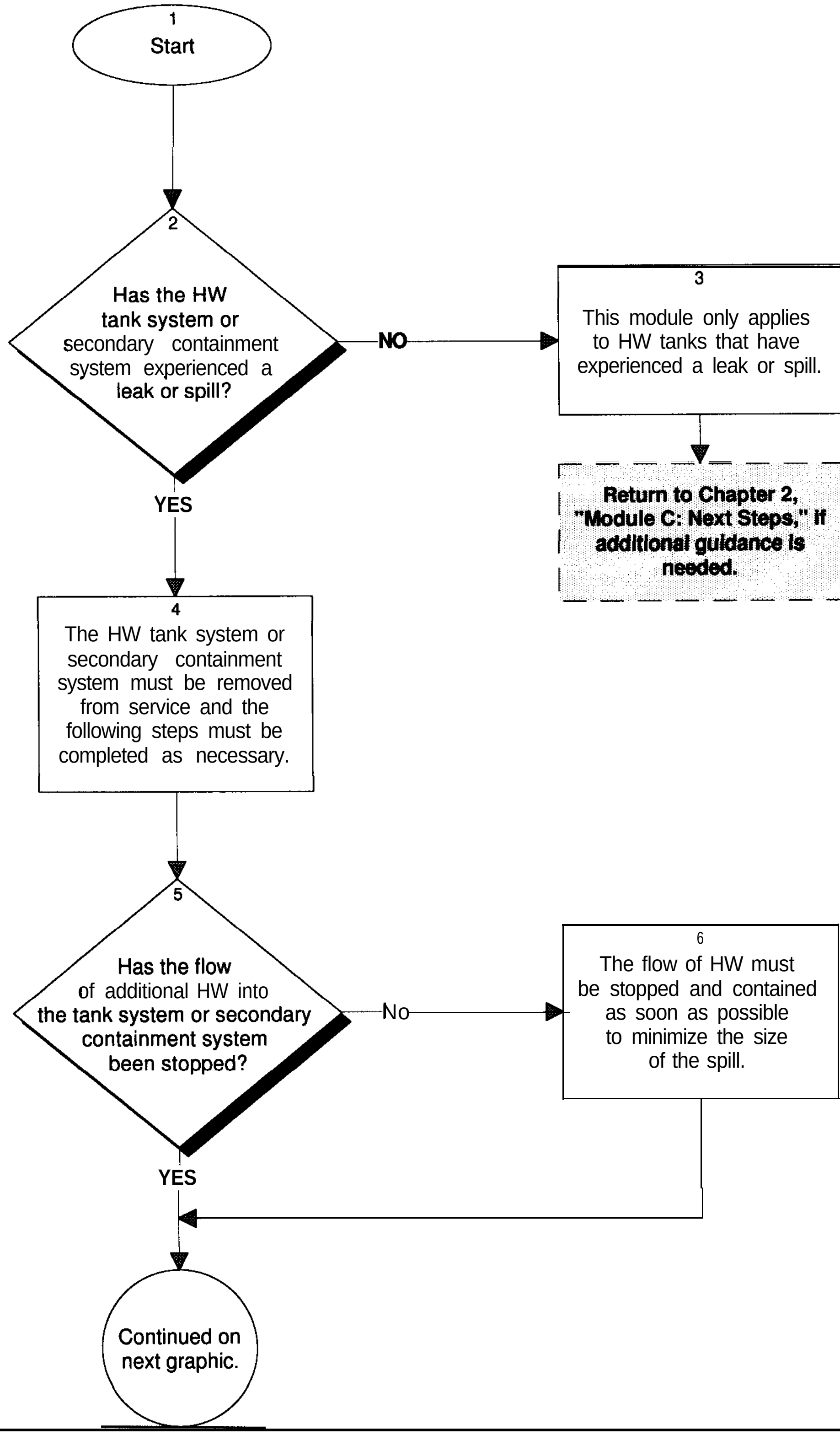
Has the response to a leak or spill been appropriate?

After a leak or spill from a HW tank system has been confirmed, steps must be taken immediately to:

- Prevent the release of more waste to the environment;
- Inspect, repair, or replace the tank;
- Remediate affected soil, groundwater, and/or surface water as necessary; and
- Notify the appropriate authorities of the release.

The following module provides the HW tank release requirements. Included in this module are HW tank repair and/or replacement requirements.

Figure 8.1: Response to Leaks or Spills



Step 1 Start

Step 2 EPA requires that the actions in this module be taken regardless of the size of the spill.

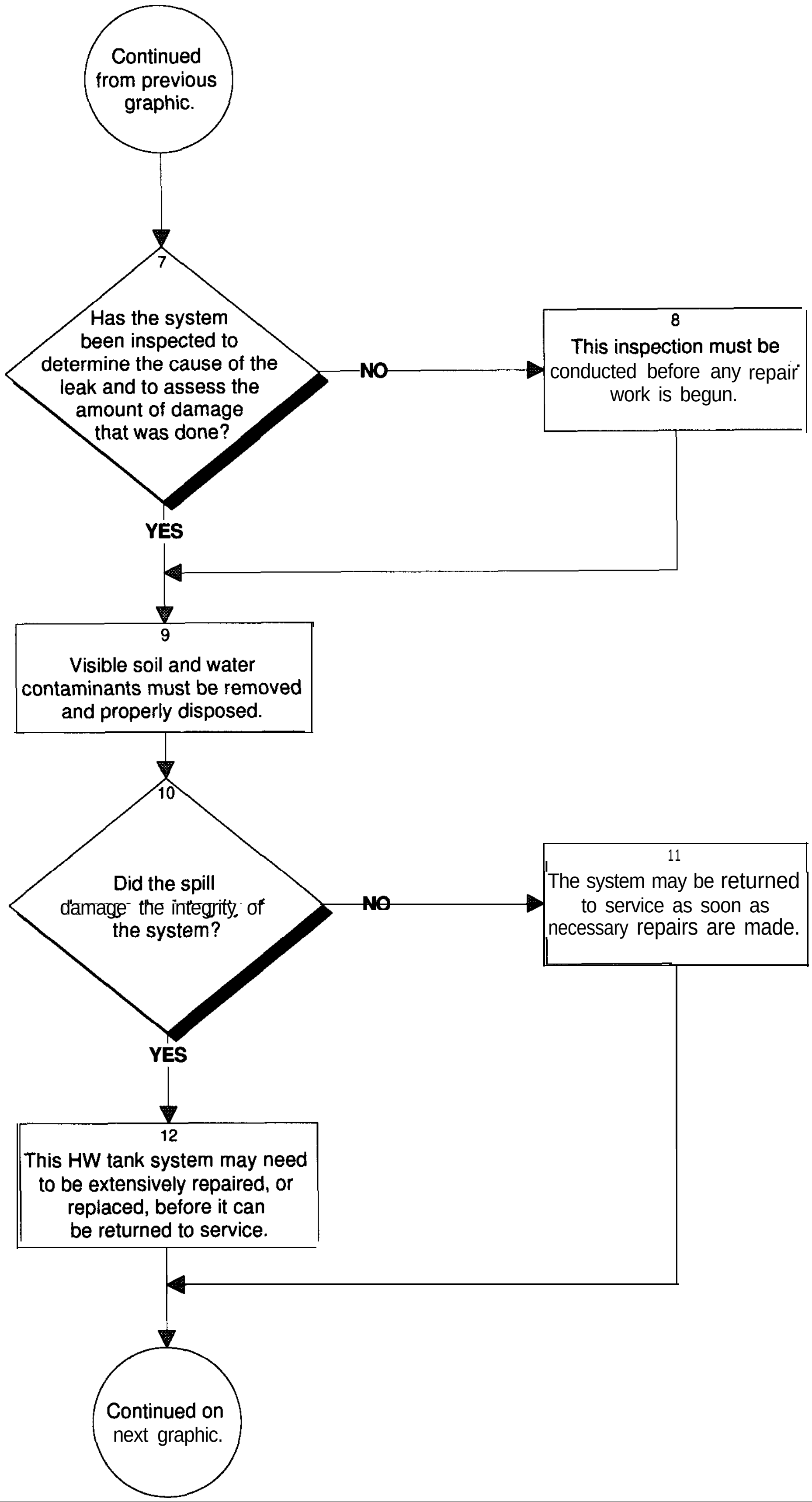
Step 3 Until a leak or spill occurs, this module does not apply. However, DOE and DOE contractor employees are encouraged to periodically review this module as part of their emergency response readiness activities.

Step 4 A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, must be removed from service immediately.

Step 5 The owner or operator must immediately stop the flow of HW into the tank system or into the secondary containment system and inspect the system to determine the cause of the release. The portion of the tank system that is leaking (if it can be easily located) should be isolated from the non-leaking parts of the system.

Once the waste flow is stopped, disconnect and cap all open pipe ends, except for vent piping. [3]

Step 6 Collection ditches, trenches, barrier curtains, plastic curtains, or booms may be used for HW flow containment. API Publication 1628, Underground Spill Cleanup Manual, contains a number of suggestions for trapping and recovering flowing liquids. [13]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7
Has the system been inspected to determine the cause of the leak and to assess the amount of damage that was done?
NO
8
This inspection must be conducted before any repair work is begun.
YES
9
Visible soil and water contaminants must be removed and properly disposed.
10
Did the spill damage the integrity of the system?
NO
11
The system may be returned to service as soon as necessary repairs are made.
YES
12
This HW tank system may need to be extensively repaired, or replaced, before it can be returned to service.
Continued on next graphic.

Step 7 The owner/operator must immediately conduct a visual inspection of the release. Released HW may migrate to manholes, drain lines, basements, or other low areas. When remedying a visible release, the owner or operator should inspect surrounding streams, waterways, drainage channels, and wetlands. [3].

Step 8 Based upon that inspection, the owner and operator must:

- Prevent further migration of the leak or spill to soils or surface water; and
- Remove, and properly dispose of, any visible contamination of the soil or surface water.

Step 9 If the release was **from the tank system**, the owner/operator must remove as much of the waste as is necessary to prevent further release of HW to the environment and to allow inspection and repair of the tank system to be performed. This must be done within 24 hours after detection of the leak, or at the earliest practicable time if the owner/operator can demonstrate that more time is needed.

If the material released was **to a secondary containment system**, all released materials must be removed within 24 hours, or in as timely a manner as is possible, to prevent harm to human health and the environment.

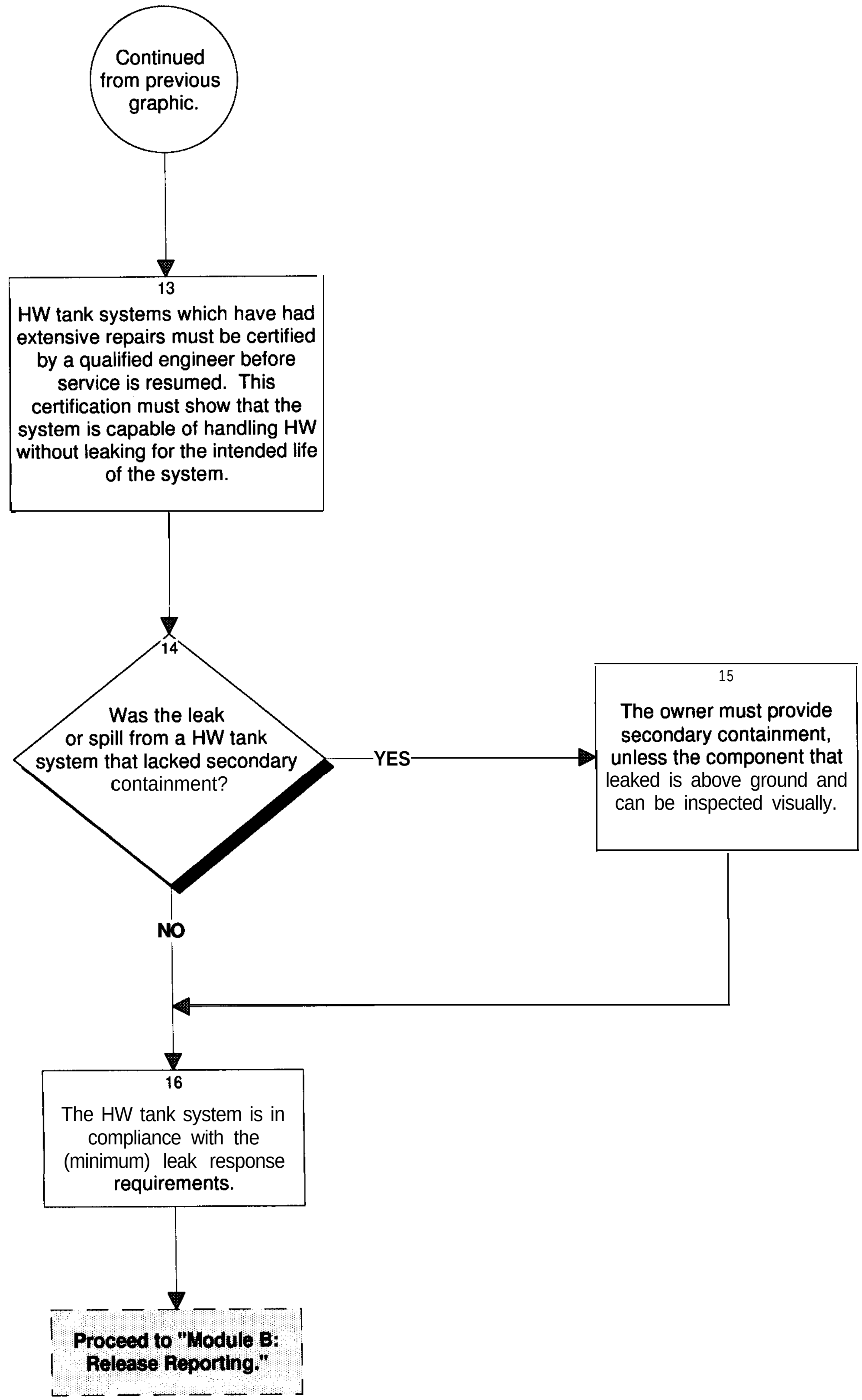
Step 10 To determine if the spill or leak damaged the integrity of the HW tank system, consult Chapter 3, "Integrity Testing for Existing Tanks," for a complete description of the requirements for HW tank integrity testing.

Step 11 If the cause of the release was a spill that **has not** damaged the integrity of the system, the owner/operator may return the system to service as soon as the released waste is removed and repairs, if necessary, are made.

If the cause of the release was a leak from the primary tank system into the secondary containment system, all necessary repairs must be made prior to returning the tank to service.

Guidelines to identify tanks that can be repaired by applying or installing an interior lining are contained in API Publication 1631, "Recommended Practice for the Interior Lining of Existing Steel Underground Storage Tanks." [14]

Step 12 Examples of extensive repairs include repairing a ruptured tank, fixing torn secondary containment liners, or sealing concrete vaults.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13
HW tank systems which have had extensive repairs must be certified by a qualified engineer before service is resumed. This certification must show that the system is capable of handling HW without leaking for the intended life of the system.
14
Was the leak or spill from a HW tank system that lacked secondary containment?
YES
15
The owner must provide secondary containment, unless the component that leaked is above ground and can be inspected visually.
NO
16
The HW tank system is in compliance with the (minimum) leak response requirements.
Proceed to "Module B: Release Reporting."

Step 13 If the tank system required extensive repair (e.g., installation of an internal liner, repair of a ruptured primary containment or secondary containment vessel), it must not be returned to service unless certification by an independent, qualified, registered professional engineer (as required in 40 CFR 270.11(d)) shows that the repaired system is capable of handling hazardous wastes, without release, for the intended life of the system. The owner/operator must submit this certification to the Regional Administrator of the EPA within seven days after returning the tank system to use.

Step 14 If a release from a component of a tank system lacking secondary containment occurs, the owner/operator must provide that component with **secondary containment** that satisfies the requirements of Chapter 7 before it can be returned to service, unless the source of the leak is an aboveground portion of a tank system that can be inspected visually.

If the source is an aboveground component that can be inspected visually, the component must be **repaired** and may be returned to service without secondary containment as long as the requirements of Step 8 are satisfied.

If a component is **replaced**, that component must satisfy the requirements for new tank systems or components in 40 CFR 264/265.192 (Chapter 4) and 40 CFR 264/265.193 (Chapter 7).

If part of an underground tank system is to be **replaced**, several considerations are important. New steel connected to older steel corrodes faster. In the electrochemical activity of corrosion, a new surface is generally more active (anodic) than an older surface, which is generally coated with rust or scale from having been in soil for a long time. It is not uncommon for new steel to corrode and leak within a very short time while older steel portions of a tank system maintain their integrity. [3]

Step 15 If a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection (e.g., the bottom of an onground tank), the entire component must be provided with secondary containment in accordance with 40 CFR 264/265.193 prior to being returned to use.

Step 16 This HW tank is in compliance with the minimum HW tank release response, repair, and replacement requirements.

Note: Unless the owner/operator satisfies the requirements of Steps 11-15, the tank system must be **closed** in accordance with 40 CFR 264/265.197. See Chapter 10 for the requirements found in 40 CFR 264/265.197.

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8.3 Module B: Release Reporting

8.3.1 Introduction

Under RCRA notification of a release of HW is required when the quantity of HW released is greater than or equal to one pound. In addition, CERCLA and EPCRA require additional reporting if the HW released during a 24-hour period equals or exceeds its reportable quantity (RQ) as indicated in 40 CFR Part 302. Notification under these circumstances must be made to the National Response Center (NRC) and local authorities.

DOE personnel should consult this chapter when reporting a release of HW from a tank. DOE personnel should **also** consult the DOE Orders that govern DOE's internal reporting requirements. These Orders include (but may not be limited to):

- DOE Order 5500.1B, "Emergency Management System," May 30, 1991;
- DOE Order 5500.2B, "Emergency Categories, Classes, and Notification and Reporting System," April 30, 1991;
- DOE Order 5500.3A, "Planning and Preparedness for Operational Emergencies," April 30, 1991;
- DOE Order 5500.10, "Emergency Readiness Assurance Program," April 30, 1991; and
- DOE Order 5000.3B, "Occurrence Reporting and Processing of Operations Information," February 22, 1993.

8.3.2 Milestones

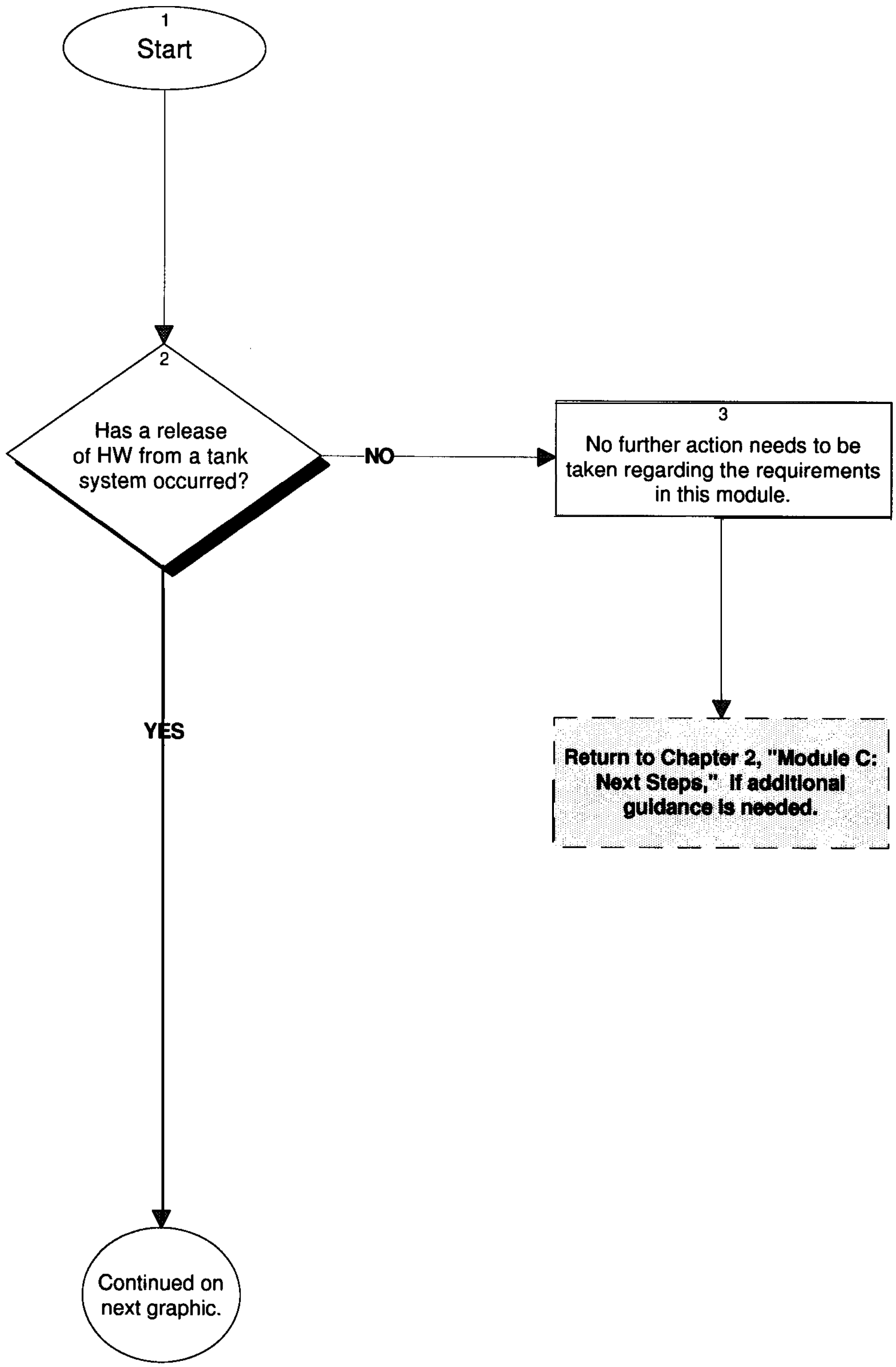
Have all proper authorities been notified of the release of HW from a tank system?

The owner or operator must determine the amount of HW released and:

- If $\geq$ one pound of HW is released, notify the NRC, the appropriate Regional Administrator of the EPA, etc. as necessary; or
- If the spill is less than one pound and immediately cleaned up, no notification is required.

The following module describes the minimum release reporting requirements.

Figure 8.2: Release Reporting

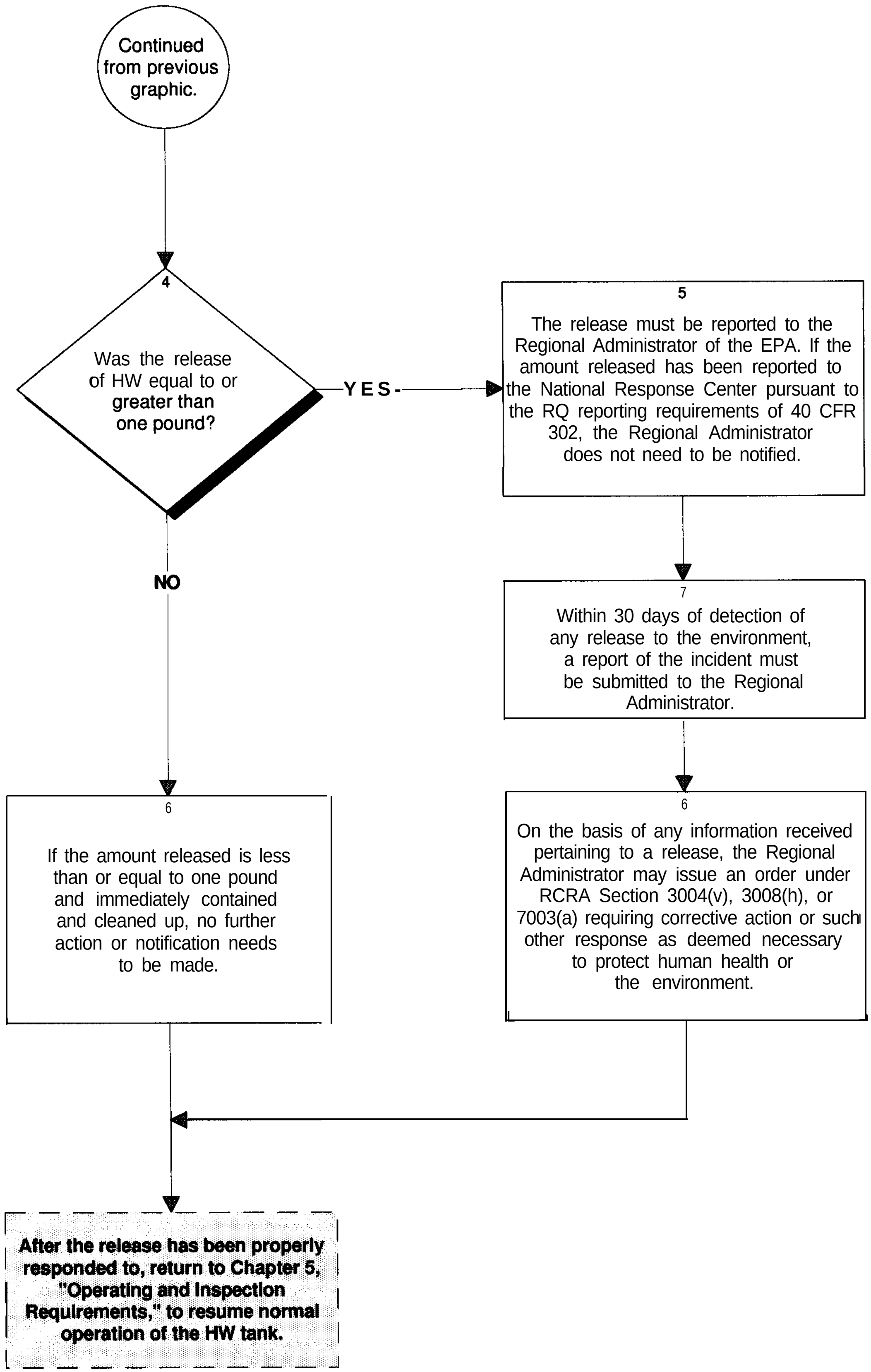


Step 1 Start

Step 2 Regardless of the size or location of the release, the response to the release must be immediate and in full compliance with the requirements of 40 CFR 264/265.196.

In addition to the RCRA reporting requirements described in this module, reporting is required under CERCLA and EPCRA. DOE/OEG has prepared an Information Brief "Reporting Releases of Hazardous Substances under CERCLA and EPCRA," which contains information about release reporting under CERCLA and EPCRA. In June of 1994, OEG also published "Hazardous Substance Release Reporting under CERCLA, EPCRA Section 304, and DOE Emergency Management System/Occurrence Reporting Requirements." For additional information, refer to DOE Publication "CERCLA Reporting Requirements, DOE Occurrence Reporting, and the DOE Emergency Management System." Furthermore, the Office of Environmental Policy and Assistance (OEPA) also has developed a HyperText-based, user-friendly computer program called the *RQ¯CALCULATOR*, to assist field personnel in determining if an RQ has been exceeded. [15], [16], [17], [21]

Step 3 Until a release of HW occurs, reporting to the EPA or NRC is not required.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4
Was the release of HW equal to or greater than one pound?
YES
5
The release must be reported to the Regional Administrator of the EPA. If the amount released has been reported to the National Response Center pursuant to the RQ reporting requirements of 40 CFR 302, the Regional Administrator does not need to be notified.
NO
7
Within 30 days of detection of any release to the environment, a report of the incident must be submitted to the Regional Administrator.
6
If the amount released is less than or equal to one pound and immediately contained and cleaned up, no further action or notification needs to be made.
6
On the basis of any information received pertaining to a release, the Regional Administrator may issue an order under RCRA Section 3004(v), 3008(h), or 7003(a) requiring corrective action or such other response as deemed necessary to protect human health or the environment.
After the release has been properly responded to, return to Chapter 5, "Operating and Inspection Requirements," to resume normal operation of the HW tank.

Step 4 Releases of greater than one pound of HW must be reported pursuant to 40 CFR 264/265.196. However, it is important to note that RCRA requires reporting of releases that are **greater than** one pound, but CERCLA/EPCRA require reporting of releases that are **equal to or greater than** the RQ, which may be one pound. Most RQs, however, are greater than one pound.

Step 5 Any release to the environment must be reported to the Regional Administrator within 24 hours of its detection. If the release has been reported pursuant to 40 CFR Part 302, that report will satisfy this requirement.

A leak or spill of HW is **exempted** from these report requirements if it is:

- Less than a quantity of one pound; **and**
- Immediately contained and cleaned up.

Step 6 While there are no additional reporting requirements under 40 CFR 264/265.196, consult the appropriate DOE Orders and the guidance cited on Step 2 for any additional DOE internal reporting requirements.

Step 7 Within **30 days** of detection of a release to the environment, a report containing the following information must be submitted to the Regional Administrator:

- The likely route of migration of the release;
- Characteristics of the surrounding soil (geology, hydrogeology, climate);
- Results of any monitoring or sampling conducted in connection with the release (if sampling or monitoring data relating to the release are not available within 30 days, these data must be submitted as soon as they become available);
- Proximity to downgradient drinking water, surface water, and populated areas; and
- Description of response actions taken or planned.

Step 8 RCRA Section 3004(u) requires corrective action for all releases of hazardous waste or constituents from any solid waste management unit at a TSD facility seeking a permit under RCRA Subtitle C regardless of the time at which waste was placed in such unit. RCRA Section 3004(v) requires that treatment, storage, or disposal facilities undertake corrective action beyond the facility boundary, where necessary, to protect human health and the environment.

Section 3008(h) of RCRA gives the Administrator of the EPA the authority to require corrective action at interim status facilities.

Section 7003(a) of RCRA provides the authority for the Administrator of the EPA to bring suit on behalf of the United States against any person who has contributed to the handling, storage, treatment, or disposal of any solid or hazardous waste that is deemed to be causing an imminent and substantial endangerment to health or the environment.

Also, if there has been a "routine and systematic" release, there would be a requirement (potentially) for corrective action. [12]

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Chapter 9
Accumulation Time and
Small Quantity Generator Requirements

Contents

9.1 Introduction

9.1.1 Background

HW generators have been given the authority to accumulate HW on-site for specified periods of time without a permit or interim status, as long as the requirements of 40 CFR 262.34 (Accumulation Time) and 40 CFR 265.201 (Small Quantity Generators) are met. If a generator accumulates HW in any quantity for 90 days or less and/or generates between 100 and 1,000 kilograms of HW a month, and stores it for 180 days or less (or 270 days if the generator must ship the waste a distance greater than 200 miles and does not accumulate over 6,000 kilograms on-site at any time), a permit is not required.

9.1.2 Major Requirements

- **Module A: Accumulation Time Requirements.** This module describes the time requirements for accumulating HW on-site in tanks without a permit.
- **Module B: Small Quantity Generator Requirements.** Owners and operators who qualify as small quantity generators may store their HW on-site without a permit under the terms described in this module.

9.2 Module A: Accumulation Time Requirements

9.2.1 Introduction

Generators of HW may accumulate HW on-site for 90 days or less **in any quantity** without a permit or interim status as long as the waste-handling requirements of 40 CFR Part 265, Subpart J except for 265.197(c) and 265.200 and certain tank marking requirements are met. In developing these regulations, EPA recognized that generators often need time to accumulate HWs for economical shipment off-site, and for efficient management on-site.

DOE personnel should consult this chapter when contemplating the establishment of any new "satellite" accumulation areas, including HW tanks.

9.2.2 Milestones

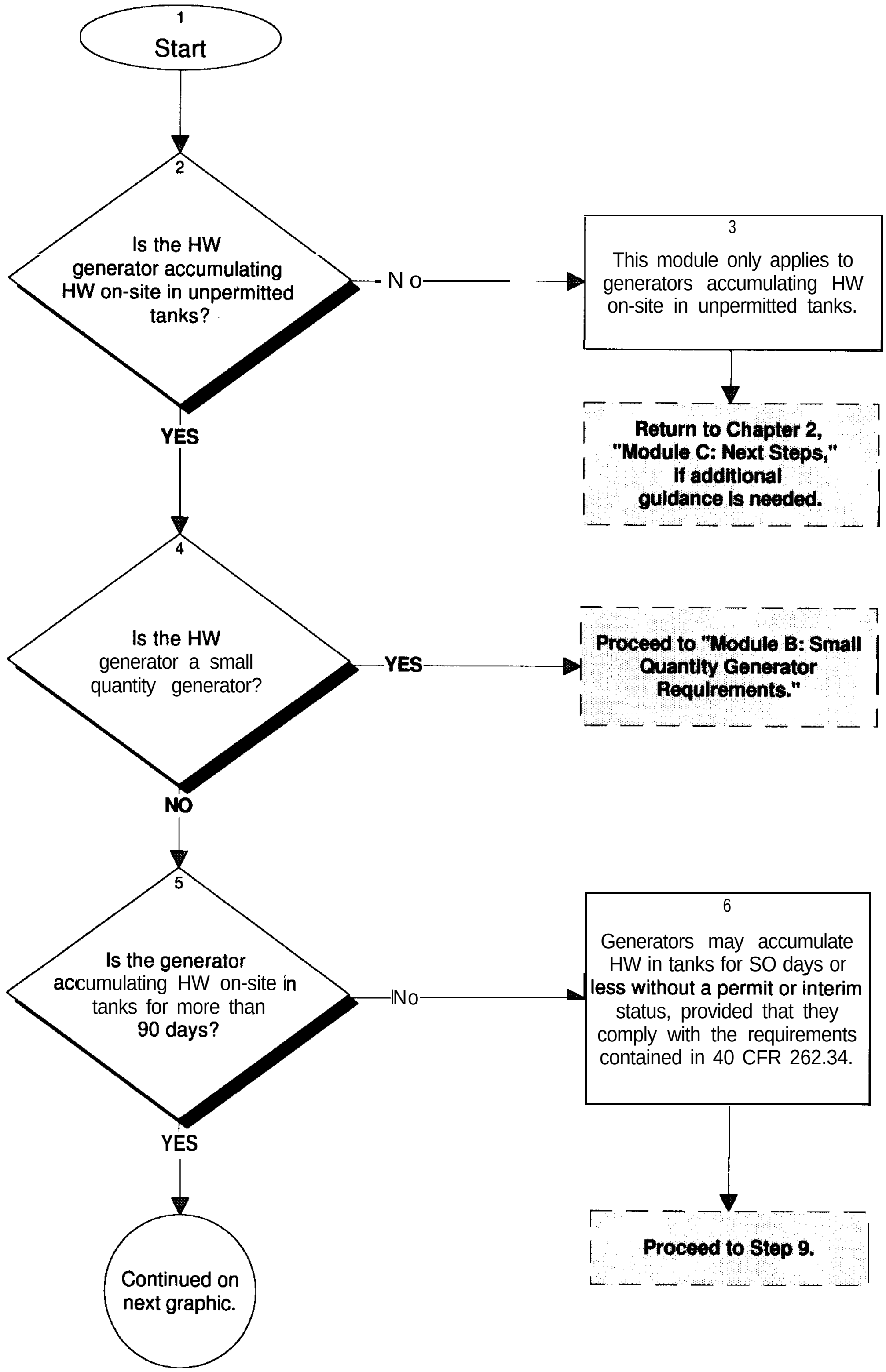
Is the HW generator accumulating HW on-site in compliance with 40 CFR 262.34?

The HW generator is in compliance if:

- HW is not accumulated on-site for more than 90 days without the approval of the Regional Administrator;
- The date upon which the accumulation period began and the words "Hazardous Waste" are clearly marked on the tank; and
- The generator complies with the requirements of 40 CFR Part 265 Subpart J, except 40 CFR 265.197(c) (Closure and Post-closure Care)

The following module describes the requirements that must be met when accumulating HW on-site in tanks at a facility without a permit or interim status.

Figure 9.1: Accumulation Time Requirements



Step 1 Start

Step 2 EPA allows hazardous waste generators to accumulate hazardous waste on-site in tanks without a permit or interim status for the purpose of accumulating enough HW to make it economical for the generator to send the HW off-site for treatment or disposal.

Step 3 If the HW generator is not accumulating HW on-site in tanks, these regulations do not apply.

Step 4 Small quantity generators (SQGs) are those who generate greater than 100 but less than 1,000 kilograms HW on-site. The requirements for SQGs are covered in Module B.

Step 5 The generator may accumulate HW on-site for 90 days or less without a permit or without having interim status, provided that the generator complies with certain requirements.

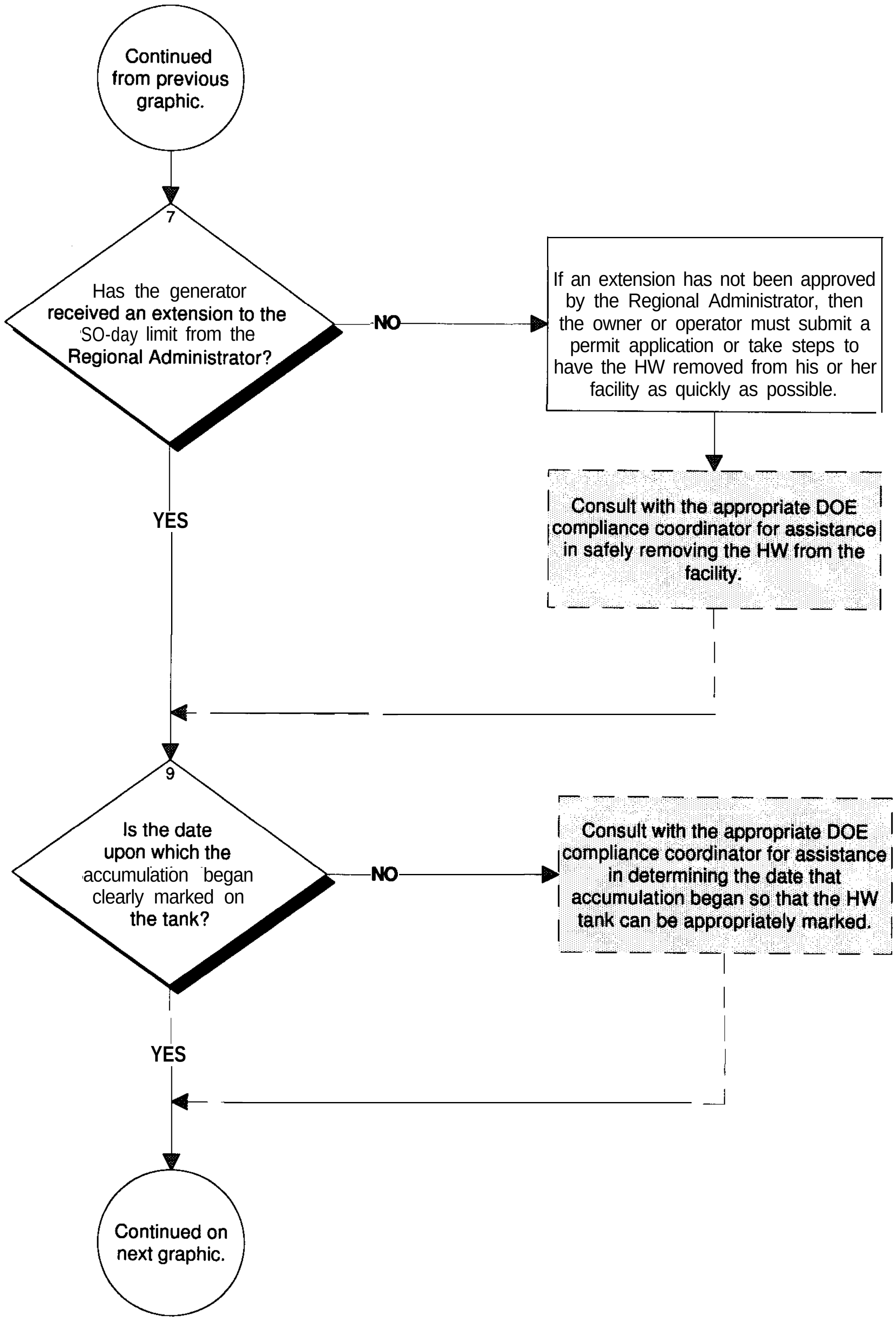
Step 6 According to 40 CFR 262.34, the generator must comply with Subpart J of 40 CFR Part 265 (Tank Systems), **except**:

- 40 CFR 265.197(c) (Closure and post-closure care requirements for HW tank systems without secondary containment) - (see Chapter 10, Module B, for these requirements); and
- 40 CFR 265.200 (Waste Analysis and Trial Tests).

In addition, such a generator is **exempt** from all requirements in Subparts G (Closure and post-closure plan) and H (Financial Requirements) of 40 CFR Part 265, **except** for:

- 40 CFR 265.111 (Closure Performance Standard); and
- 40 CFR 265.114 (Disposal and Decontamination of Equipment, Structures, and Soils).

The generator **must** comply with the requirements for owners or operators in Subparts C (Preparedness and Prevention) and D (Contingency Plan and Emergency Procedures) in 40 CFR Part 265, and with 40 CFR 265.16 (Personnel Training).



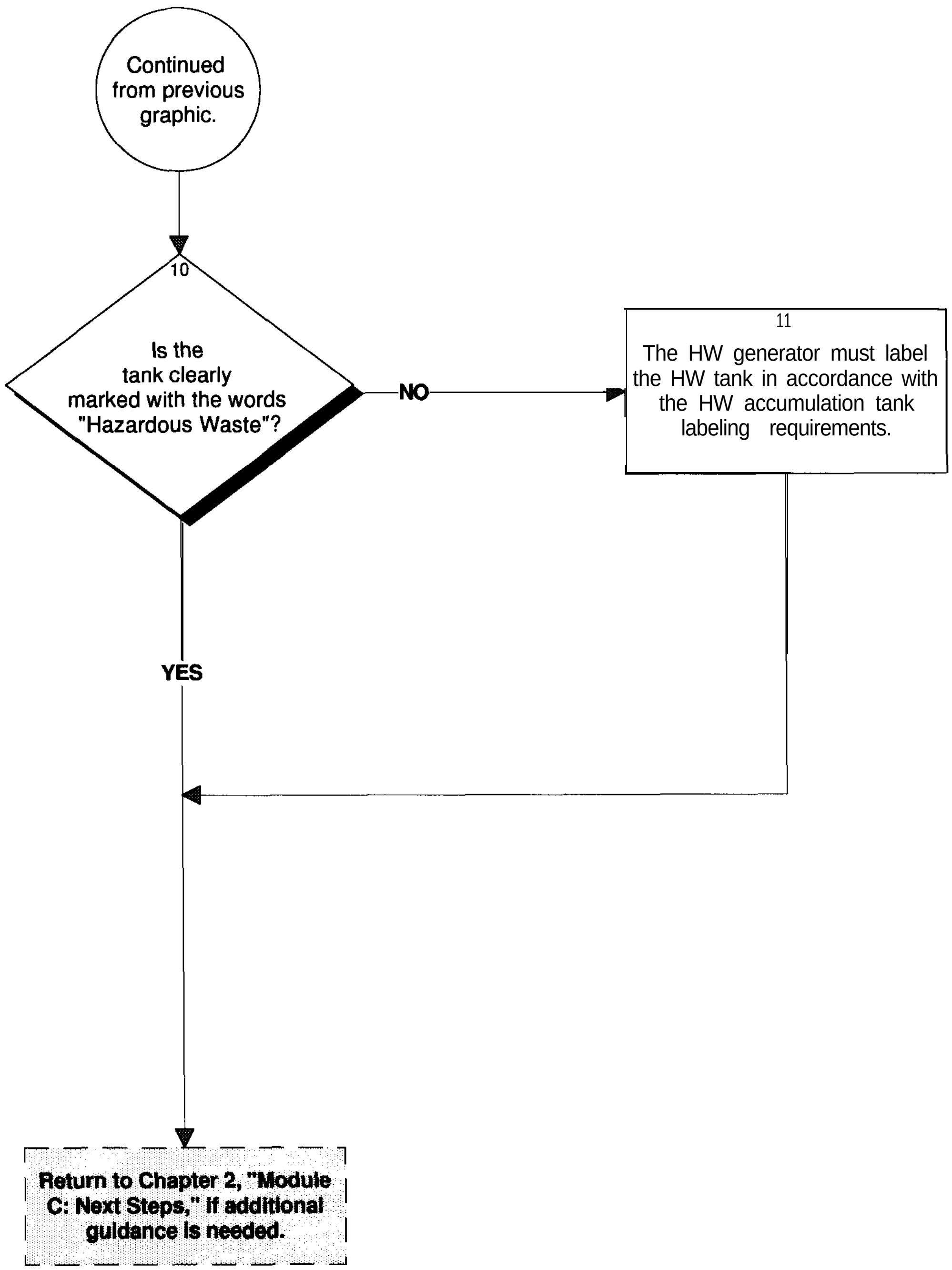
Continued from previous graphic.
7
Has the generator received an extension to the SO-day limit from the Regional Administrator?
NO
If an extension has not been approved by the Regional Administrator, then the owner or operator must submit a permit application or take steps to have the HW removed from his or her facility as quickly as possible.
Consult with the appropriate DOE compliance coordinator for assistance in safely removing the HW from the facility.
YES
9
Is the date upon which the accumulation began clearly marked on the tank?
NO
Consult with the appropriate DOE compliance coordinator for assistance in determining the date that accumulation began so that the HW tank can be appropriately marked.
YES
Continued on next graphic.

Step 7 A generator who accumulates HW for more than 90 days is an operator of a storage facility and is subject to the requirements of 40 CFR Parts 264 and 265 and the permit requirements of 40 CFR Part 270 **unless** he/she has been granted an extension to the 90-day period.

Step 8 An extension of up to 30 days may be granted at the discretion of the Regional Administrator on a case-by-case basis. Such an extension may be granted by EPA if HW must remain on-site for longer than 90 days due to unforeseen, temporary, and uncontrollable circumstances. If the extension is not granted, the waste must be removed or the facility must submit a permit application.

Step 9 The date that accumulation began must be clearly marked so that compliance personnel can manage the tanks according to EPA's deadlines.

Figure 9.1: Accumulation Time Requirements - continued



Step 10 Although 40 CFR 262.34 only requires the words "Hazardous Waste" on a HW tank label, it is prudent for the generator to label the tank with the actual contents of the tank (e.g., EPA waste codes).

Step 11 The "Hazardous Waste" label and the accumulation date are the minimum information that must be affixed to the tank as required by 40 CFR 262.34(a)(2) and (3).

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9.3 Module B: Small Quantity Generator Requirements

9.3.1 Introduction

Small quantity generators (SQGs) are those generators that produce **more** than 100 kilograms but **less** than 1,000 kilograms a month of HW. SQGs may store HW without a permit or interim status for longer than 90 days as long as they comply with 40 CFR 262.34(d), (e), and/or (f) (Accumulation Time) plus the additional requirements found in 40 CFR 265.201 (Special Requirements for Generators of Between 100 and 1,000 kg/Mo that Accumulate HW in Tanks) and Subpart C of 40 CFR Part 264/265.

A SQG may be **conditionally exempt** from full SQG regulation if he or she generates **less** than 100 kilograms of HW in a month; less than 1 kilogram of **acutely** HW listed in 40 CFR 261.31, 261.32,* or 261.33(e); or less than 100 kilograms per month of any (1) residue or (2) contaminated soil, waste, or other debris resulting from a spill into or on any land or water body of an acutely HW listed in 40 CFR 261.31, 261.32, or 261.33(e).

A conditionally exempt SQG's HW are not subject to regulation under 40 CFR Parts 262 through 266, 268, 270, and 124 and the notification requirement of Section 3010 of RCRA. However they must comply with 40 CFR 262.11 (HW Determination).

Hazardous wastes generated by conditionally exempt SQGs may be mixed with non-HW and remain conditionally exempt even though the resultant mixture exceeds the quantity limitations, unless the mixture exhibits any of the characteristics of HW identified in Subpart C of 40 CFR Part 261.

If a conditionally exempt SQG's wastes are mixed with used oil, the mixture is subject to Subpart E of 40 CFR Part 266 if it is destined to be burned for energy recovery. Any material produced from such a mixture by processing, blending, or other treatment is also so regulated if it is destined to be burned for energy recovery. [40 CFR 261.5]

* No acutely HWs are currently listed in 40 CFR 261.32; however, EPA may add new acutely HWs to this list in the future.

9.3.2 Milestones

Is the generator a small quantity generator?

Small quantity generators are those who:

- Accumulate more than 100 but less than 1,000 kilograms of HW in a calendar month;
- Store the HW on-site for less than 180 days (or 270 days if the generator must ship the HW greater than 200 miles); and
- Accumulate less than 6,000 kilograms of HW at any time.

Is the small quantity generator conditionally exempt?

Conditionally exempt small quantity generators are those who generate less than:

- 100 kilograms per month of hazardous waste;
- 1 kilogram per month of acutely hazardous waste; or
- 100 kilograms per month of any residue, soil, or debris resulting from the cleanup of a spill and contaminated with an acutely hazardous waste.

The following module provides the requirements for SQGs who are storing HW in tanks prior to transporting them off-site for storage or disposal.

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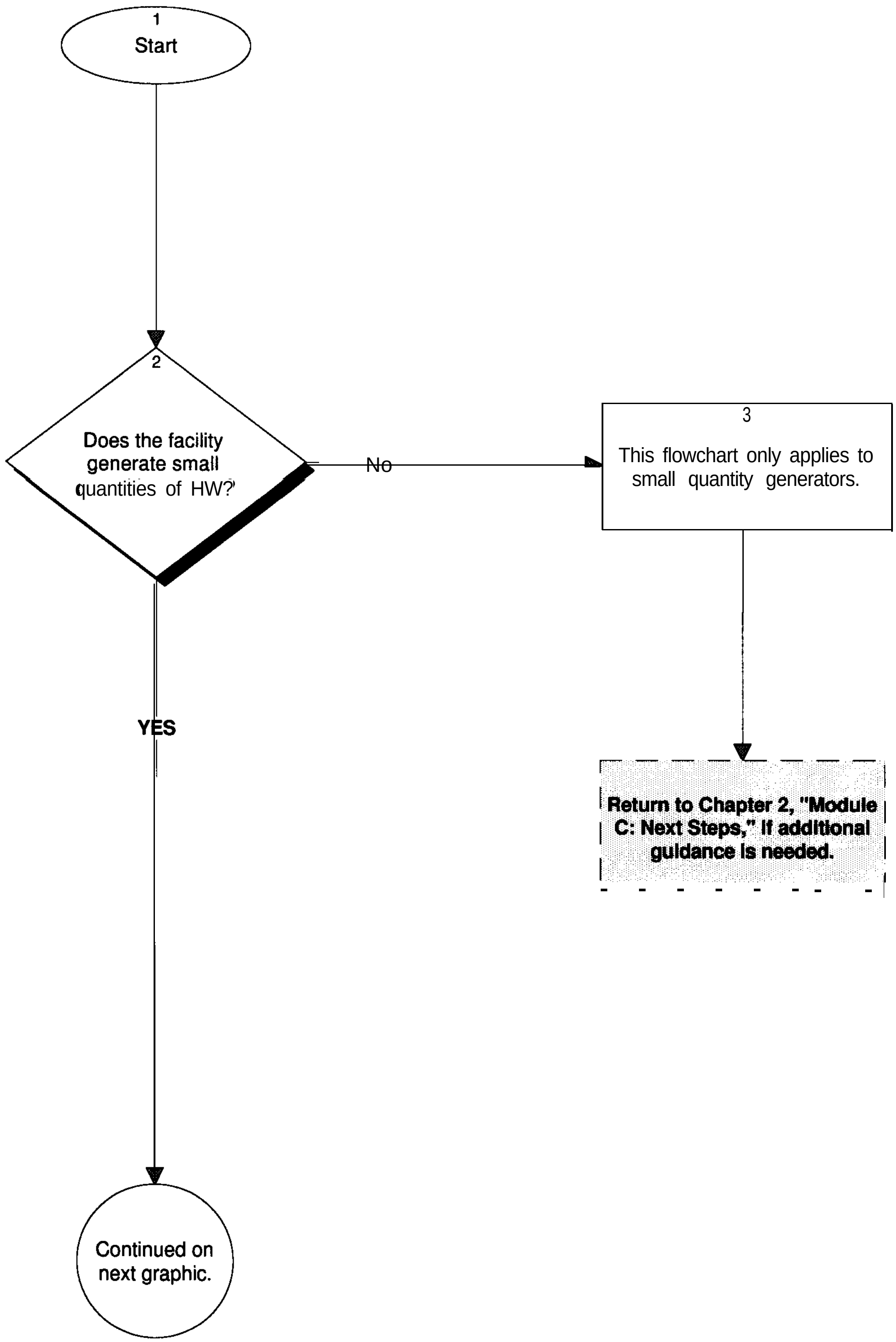
Figure 9.2 Small Quantity Generator Requirements

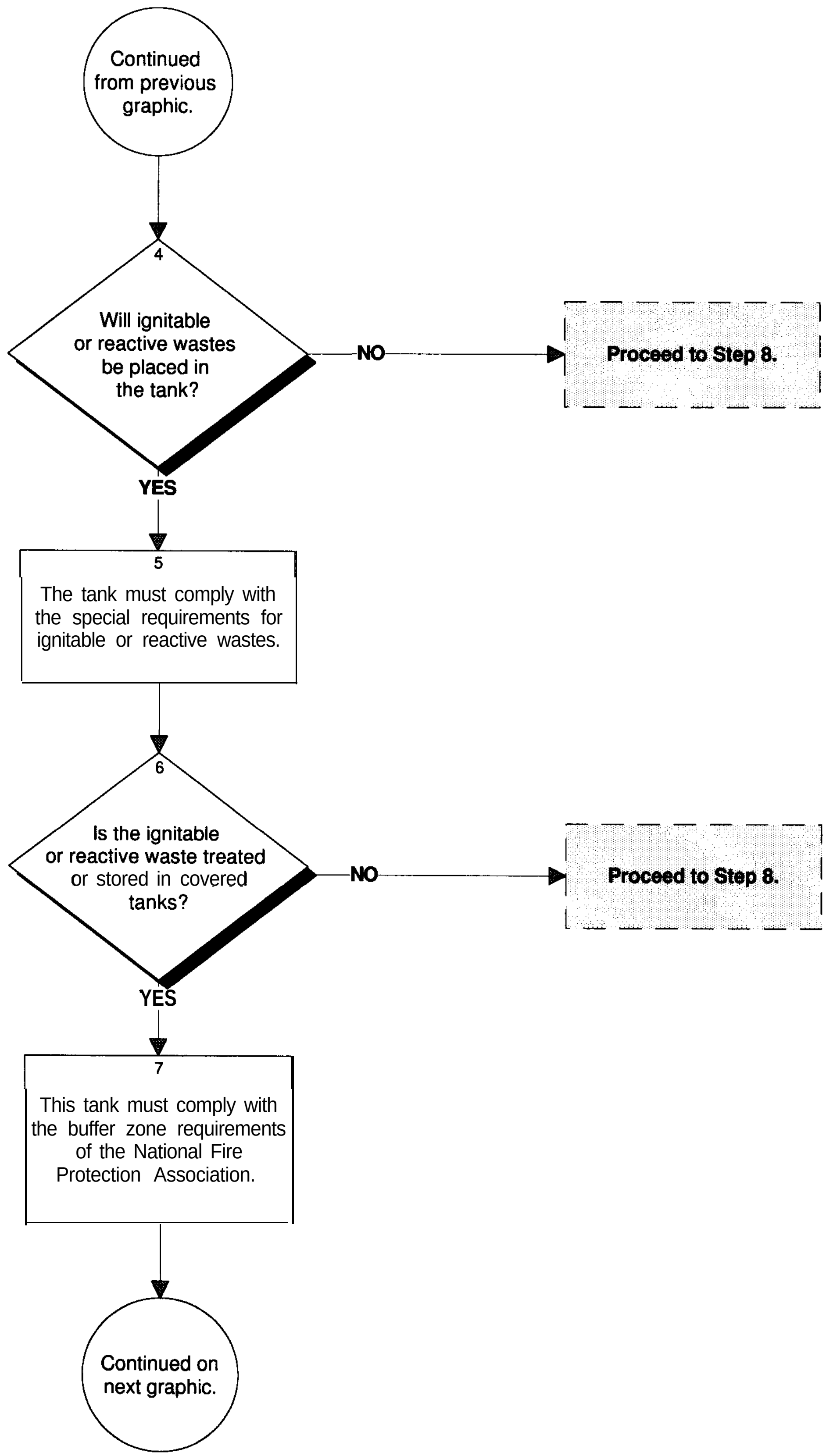


Step 1 Start

Step 2 The requirements of this section apply to small quantity generators (SQGs) who:

- Accumulate between 100 kilograms and 1,000 kilograms of HW in a calendar month;
- Accumulate HW in tanks for less than 180 days (or 270 days if the generator must ship the HW greater than 200 miles); and
- Do not accumulate over 6,000 kilograms of HW on-site at any time.

Step 3 EPA treats SQGs differently than other HW generators. This flow chart outlines the requirements for small quantity generators.


Continued from previous graphic.
4
Will ignitable or reactive wastes be placed in the tank?
NO
Proceed to Step 8.
YES
5
The tank must comply with the special requirements for ignitable or reactive wastes.
6
Is the ignitable or reactive waste treated or stored in covered tanks?
NO
Proceed to Step 8.
YES
7
This tank must comply with the buffer zone requirements of the National Fire Protection Association.
Continued on next graphic.

Step 4 Ignitable or reactive HW must not be placed in a tank unless:

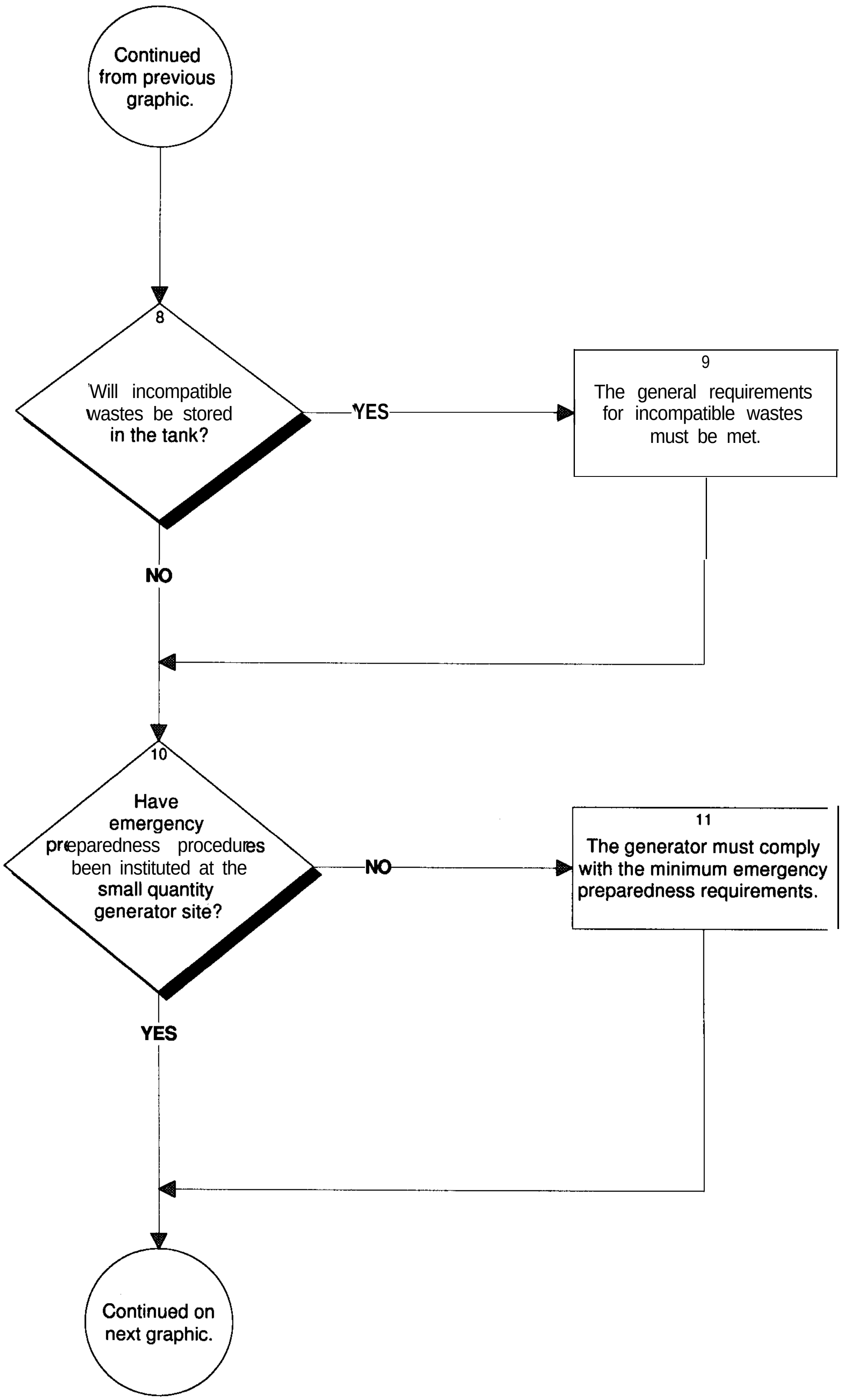
- The HW is treated, rendered, or mixed before or immediately after placement in a tank so that:
  - The resulting HW, mixture, or dissolved material no longer meets the definition of ignitable or reactive HW; and
  - The general requirements for ignitable, reactive, or incompatible hazardous wastes (Step 5) are met; or
- The HW is stored or treated in a manner that protects it from any material or condition that may cause the waste to ignite or react; or
- The tank is used solely for emergencies.

Step 5 EPA requires that SQGs comply with 40 CFR 265.17(b), which states that treatment, storage, or disposal of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials, must be conducted so that it does not:

- Generate extreme heat or pressure, fire or explosion, or violent reaction;
- Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
- Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
- Damage the structural integrity of the device or facility containing the waste; or
- Threaten human health or the environment.

Step 6 Covered tanks that hold ignitable or reactive HW must meet special EPA requirements, specified in Step 7.

Step 7 The owner or operator of a facility that treats or stores ignitable or reactive waste in covered tanks must comply with the buffer zone requirements for tanks contained in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code," (1977 or 1981). [9]


Continued from previous graphic.
8
Will incompatible wastes be stored in the tank?
YES
9
The general requirements for incompatible wastes must be met.
NO
10
Have emergency preparedness procedures been instituted at the small quantity generator site?
NO
11
The generator must comply with the minimum emergency preparedness requirements.
YES
Continued on next graphic.

Step 8 If the HW to be stored in this tank is incompatible with the material previously stored in the tank, or is incompatible with the tank itself, special EPA requirements must be met.

Step 9 Incompatible wastes, or incompatible wastes and materials (see 40 CFR Part 265, Appendix V for examples) must not be placed in the same tank, unless the requirements for ignitable, reactive, or incompatible wastes (Step 5) are met. Also, HW must not be placed in an unwashed tank that previously held an incompatible HW or material unless the general requirements for ignitable, reactive, or incompatible HWs (Step 5) are met.

Step 10 At all times there must be at least one employee, designated as the emergency response coordinator, either on the premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) who is responsible for coordinating all emergency response measures specified in this section. In addition, the generator must post the following information next to the appropriate telephone(s):

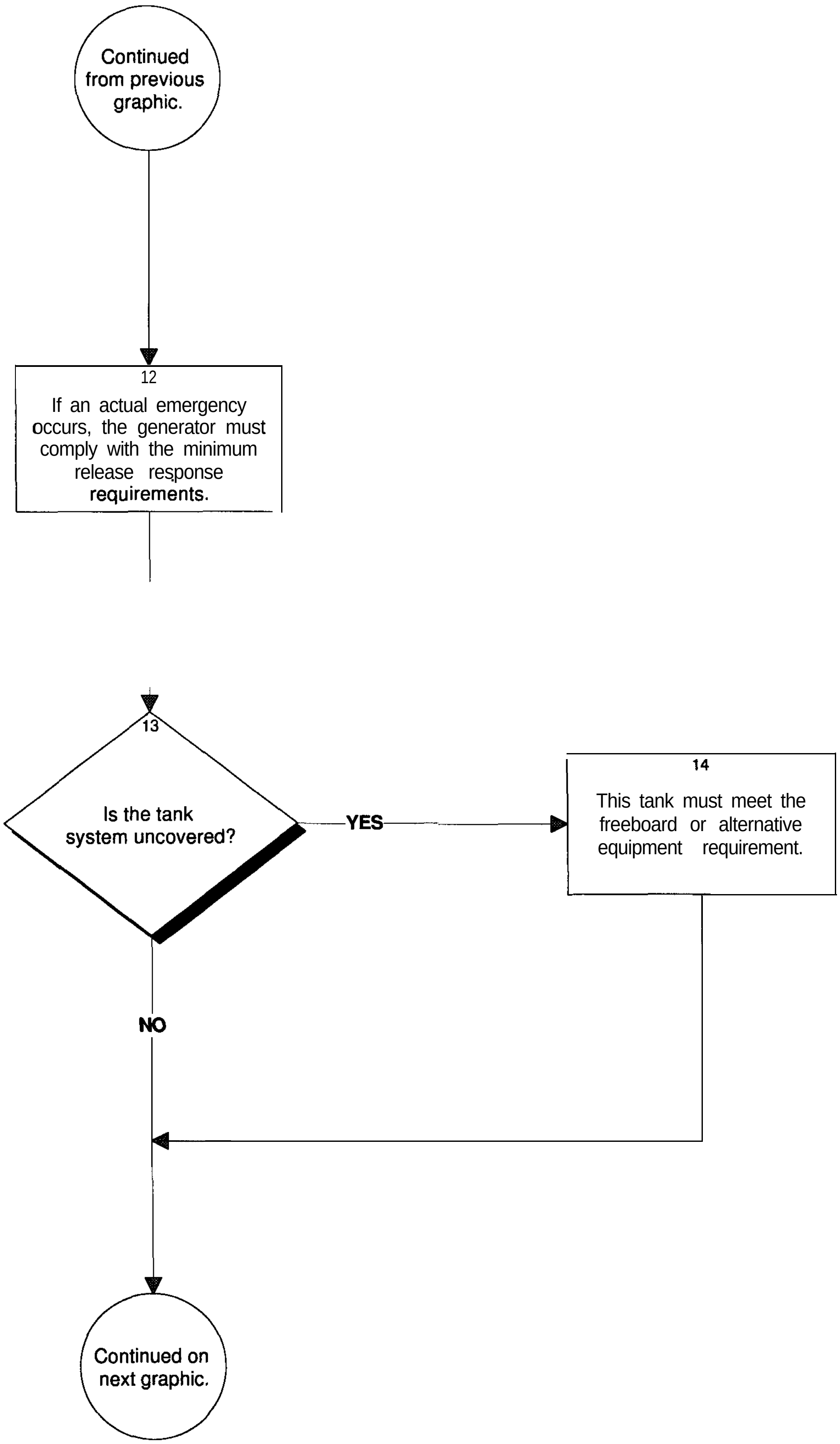
- The name and telephone number of the emergency coordinator; and
- The location of fire extinguishers and spill control material and, if present, fire alarms; and the telephone number of the responding fire department, unless the facility has a direct alarm.

The generator must ensure that all employees are thoroughly familiar with proper HW handling and emergency procedures relevant to their responsibilities during normal facility operations and emergencies. The emergency coordinator (or a designee) must respond to any emergencies that arise. The applicable responses are as follows:

- In the event of a fire, call the fire department or attempt to extinguish it using the appropriate response equipment;
- In the event of a spill, contain the flow of HW to the extent possible, and, as soon as is practicable, clean up the HW and any contaminated materials or soil;
- In the event of a fire, explosion, or other release that could threaten human health outside the facility, or when the generator has knowledge that a spill has reached surface water, he/she must immediately notify the National Response Center (using their 24-hour toll free number 800/424-8802) of the following:
  - Name, address, and U.S. EPA Identification Number of the generator;
  - Date, time, and type of incident (e.g., spill or fire);
  - Quantity and type of HW involved in the incident;
  - Extent of injuries, if any; and
  - Estimated quantity and disposition of recovered materials, if any.

  (See listing of DOE Orders under Chapter 8, 8.3.1, "Module B: Introduction" and the guidance documents listed in "Module B, Step 2").

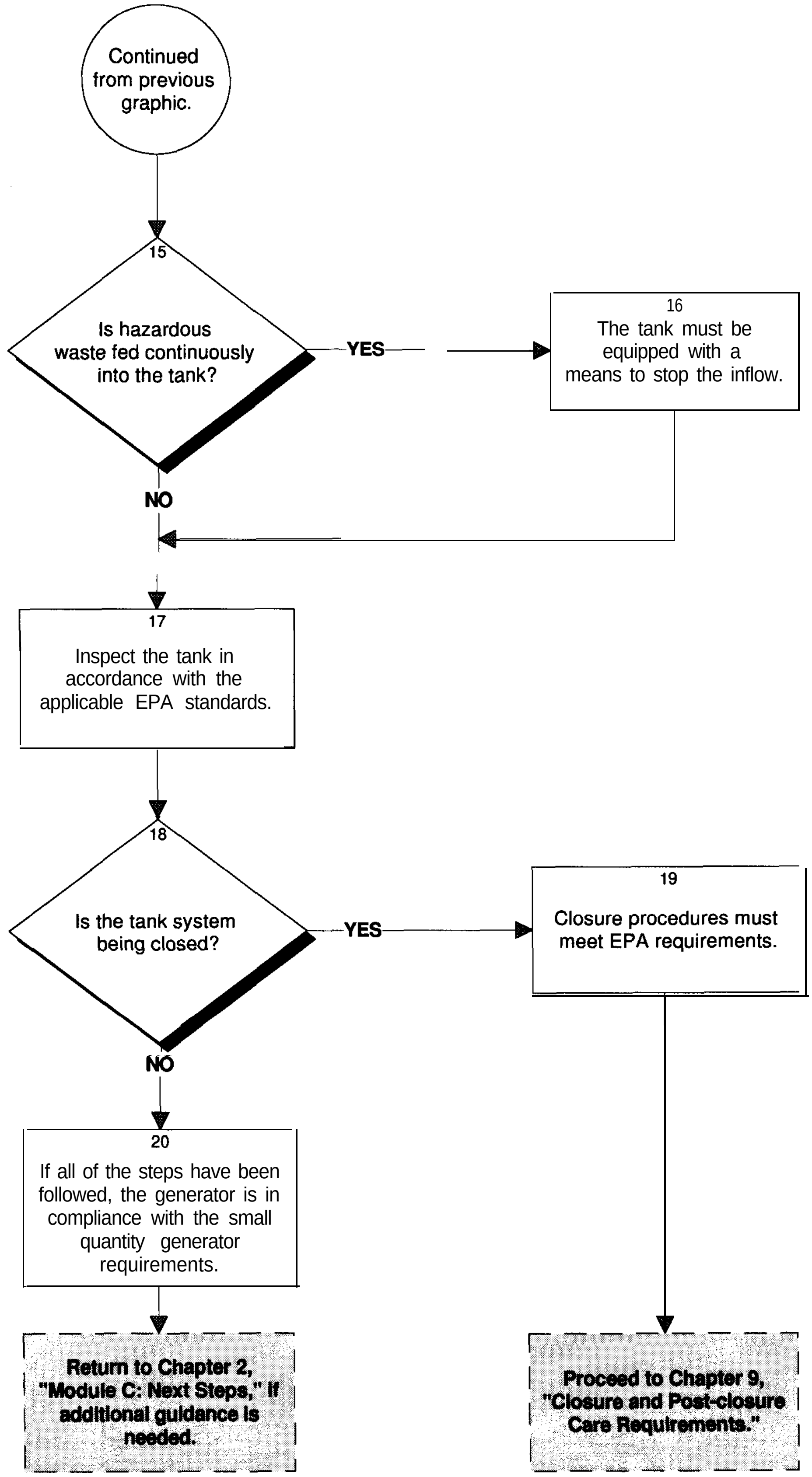
Step 11 While these are the minimum emergency preparedness requirements, the facility may need to comply with additional site-specific requirements.


Continued from previous graphic.
12
If an actual emergency occurs, the generator must comply with the minimum release response requirements.
13
Is the tank system uncovered?
YES
14
This tank must meet the freeboard or alternative equipment requirement.
NO
Continued on next graphic.

Step 12 In addition to meeting the emergency preparedness procedures of 40 CFR 262.34 found in Step 10, the requirements of 40 CFR 264/265.196 (Release Response Requirements) must be met. Refer to Chapter 8.

Step 13 Uncovered tanks must meet special EPA requirements specified in Step 14.

Step 14 Uncovered tanks must be operated to ensure at least 60 centimeters (2 feet) of freeboard. However, if the tank is equipped with a containment structure (e.g., a dike or trench), a drainage control system, or a diversion structure (e.g., standby tank) with a capacity that equals or exceeds the volume of the top 60 centimeters of the tank, the freeboard requirement is not applicable.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15
Is hazardous waste fed continuously into the tank?
YES
16
The tank must be equipped with a means to stop the inflow.
NO
17
Inspect the tank in accordance with the applicable EPA standards.
18
Is the tank system being closed?
YES
19
Closure procedures must meet EPA requirements.
NO
20
If all of the steps have been followed, the generator is in compliance with the small quantity generator requirements.
Return to Chapter 2, "Module C: Next Steps," if additional guidance is needed.
Proceed to Chapter 9, "Closure and Post-closure Care Requirements."

Step 15 Continuously fed tanks must meet special EPA requirements.

Step 16 Where HW is continuously fed into a tank, the tank must be equipped with a means to stop this inflow. Typically, tanks may have a waste feed cutoff system or a bypass system to a standby tank. These systems are intended to be used in the event of a leak or overflow from the tank due to a system failure, such as a malfunction in the treatment process or a crack in the tank.

Step 17 The following must be inspected, where present:

- Discharge control equipment (e.g., waste feed cutoff systems, bypass systems, and drainage systems) **at least once each operating day**, to ensure that it is in good working order;
- Data gathered from monitoring equipment (e.g., pressure and temperature gauges) **at least once each operating day** to ensure that the tank is being operated according to its design;
- The level of waste in the tank **at least once each operating day** to ensure compliance with the uncovered tank requirements (Step 14);
- The construction materials of the tank to detect corrosion or leaking fixtures or seams; and
- The construction materials of, and the area immediately surrounding, discharge confinement structures (e.g., dikes) **at least weekly** to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).

Note: The owner or operator must remedy any deterioration or malfunction that is found according to 40 CFR 264/265.15(c).

Step 18 Generators of between 100 and 1,000 kilograms/month of HW who are accumulating HW in tanks must, upon closure of the facility, remove HW from tanks, discharge control equipment, and discharge confinement structures.

Note: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with 40 CFR 261.3(c) or (d) that any solid waste removed from the tank is not a HW, the owner or operator becomes a generator of HW and must manage it in accordance with all applicable HW generator requirements [40 CFR Parts 262, 263, and 265].

Step 19 See Chapter 10, "Closure and Post-closure Care Requirements," for a description of the procedures to be followed when closing a HW tank system.

Step 20 The generator is in compliance with the small quantity generator requirements of 40 CFR 262.34 and 265.201.

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Chapter 10
Closure and Post-Closure Care Requirements

Contents

10.1 Introduction

10.1.1 Background

Owners and operators of HW tanks must prepare closure and post-closure care plans for their HW tanks. These plans must ensure that the closure of the HW tanks is performed in a manner that protects human health and the environment. These plans must be approved by the EPA Regional Administrator before they are implemented.

10.1.2 Major Requirements

- **Module A: HW Tank Closure Requirements.** This module contains the requirements for HW tank closure when **all** contaminated soils **can** be decontaminated or removed.
- **Module B: HW Tanks Closing in the Same Manner as HW Landfills.** This module contains the requirements for those HW tanks that must close in the same manner as a HW landfill. These requirements must be implemented when it **is not** possible to decontaminate or remove **all** contaminated soils and structures.

10.2 Module A: HW Tank Closure Requirements

10.2.1 Introduction

Owners and operators of HW tanks must develop closure plans for their HW tanks. At closure, all contaminated soils, debris, and structures must be decontaminated or removed. If that cannot be accomplished practicably, according to 40 CFR 264/265.197 the HW tank must be closed in the same manner as a HW landfill.

If the HW tank does not have secondary containment that meets the requirements of 40 CFR 193(b) through (f) and if all soils and debris cannot be decontaminated or removed, it must be closed in the same manner as a landfill. Some tanks lack secondary containment due to the receipt of an exemption, because a variance has been obtained, or because the deadline by which the existing tank must obtain secondary containment has not expired. Secondary containment requirements, as well as variances, were covered in Chapter 7.

For additional closure information, refer to DOE guidance "Closure of Hazardous and Mixed Waste Management Units at DOE Facilities" and "Delay of Closure for RCRA Hazardous Waste Management Facilities." [18], [19]

10.2.2 Milestones

Does the HW tank system either have secondary containment or a variance from the secondary containment requirements?

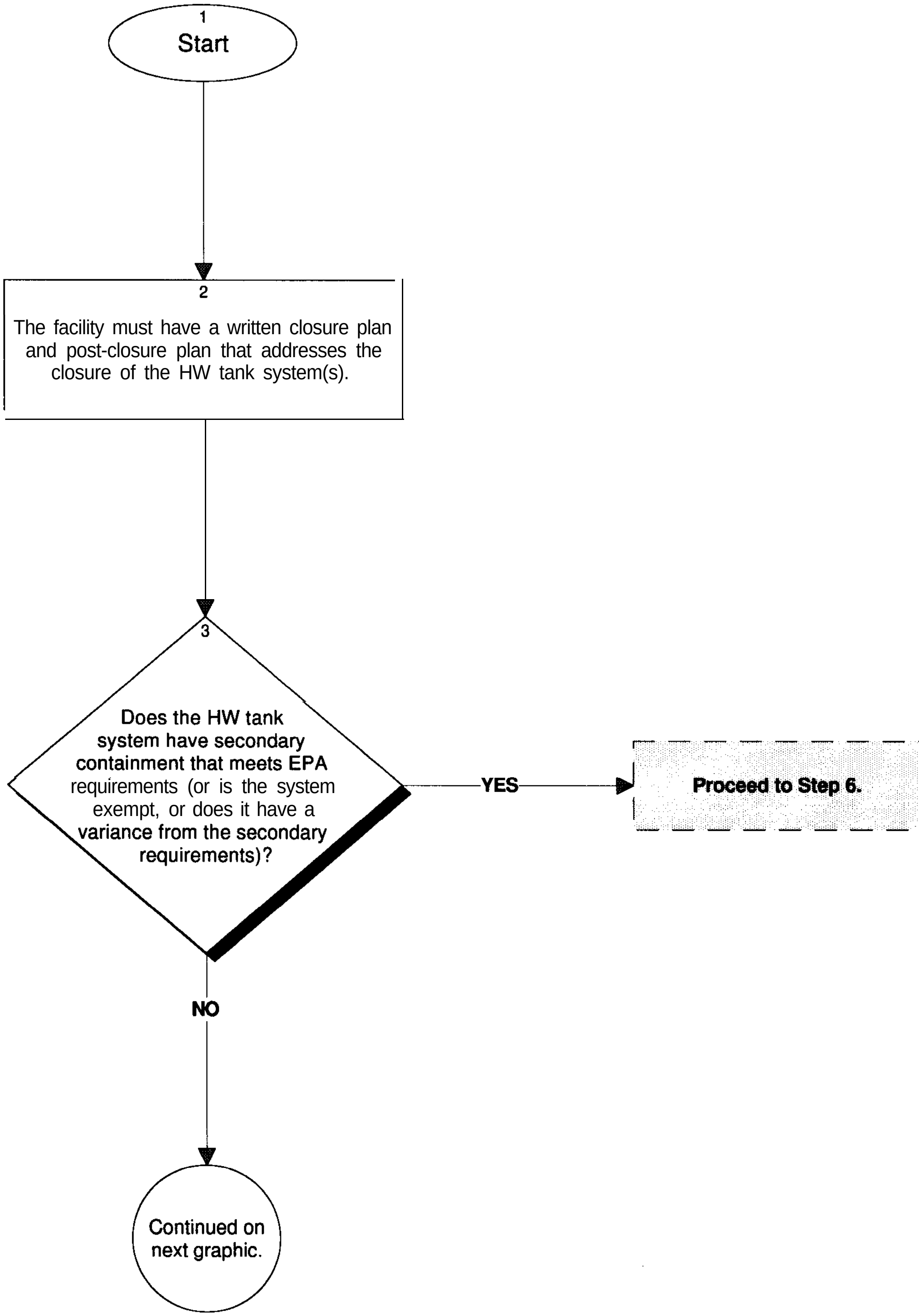
- If yes, then the HW tank may close as a HW tank.
- If no, then contingent plans for the closure and post-closure care of this tank in the same manner as a HW landfill must be developed.

Can all HW residues, contaminated containment system components, soils, structures, and equipment be removed or decontaminated?

- If yes, then the HW tank may close as a HW tank.
- If no, then the HW tank must close in the same manner as a HW landfill.

The following module describes the procedures applicable to the closure of HW tanks when all contaminated soils and structures <u>can</u> be decontaminated or removed.

Figure 10.1: HW Tank Closure Requirements



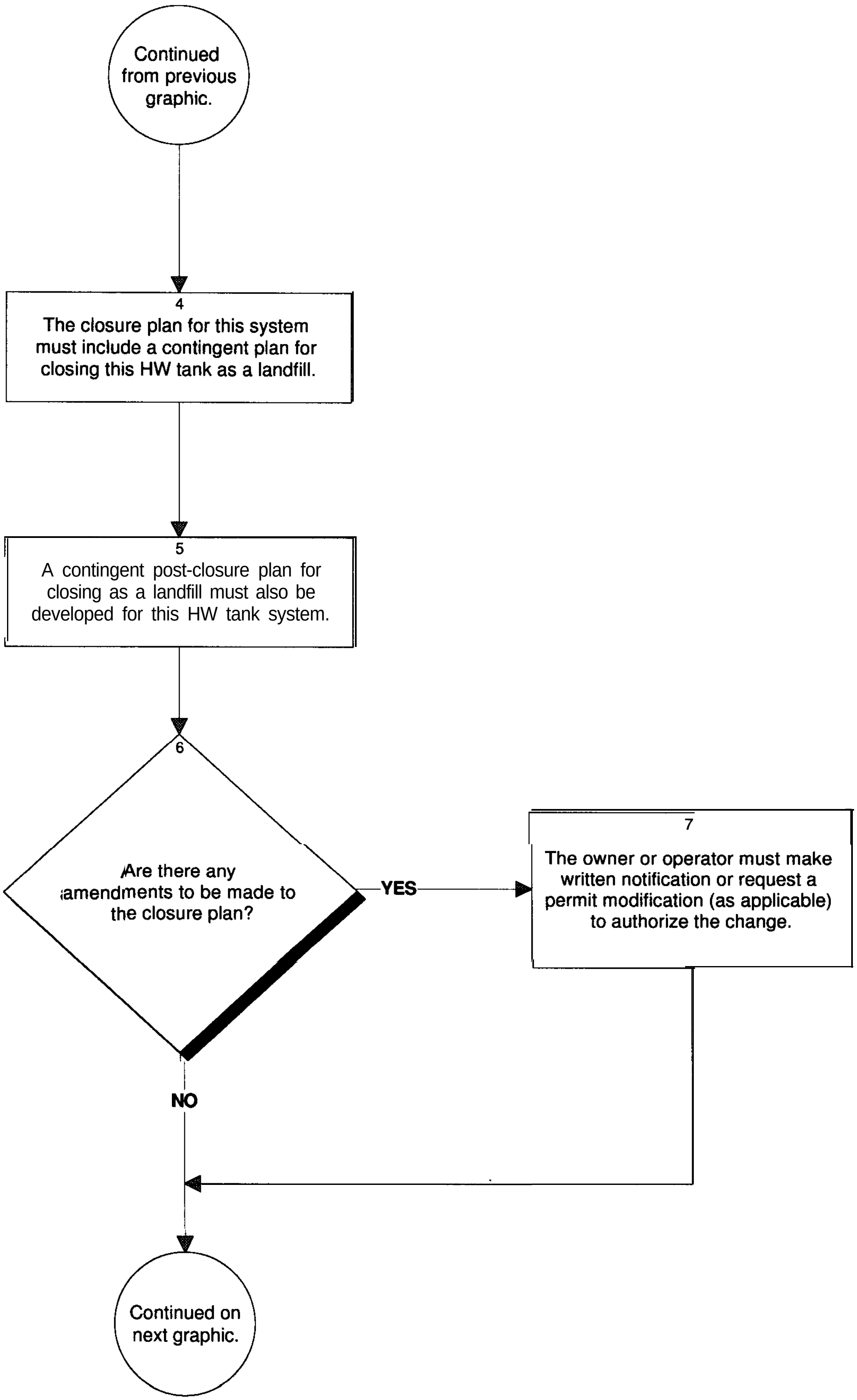
Step 1 Start

Step 2 The owner or operator must have a written closure plan. The plan must be submitted with the permit application and approved by the Regional Administrator for permitted facilities, or submitted to the Regional Administrator upon request for interim status facilities. The approved closure plan will become a condition of any RCRA permit. The plan must identify steps necessary to perform partial and/or final closure of the facility at any point during its active life. The closure plan must include, at least:

- A description of how each HW tank at the facility will be closed;
- A description of how final closure of the facility will be conducted (the description must identify the maximum extent of the operations that will be open during the active life of the facility);
- An estimate of the maximum inventory of all HWs ever stored or treated on-site over the active life of the facility and a detailed description of the methods to be used during partial and final closure, including, but not limited to, methods for removing, transporting, treating, storing, or disposing of all HW, and identification of, and the type(s) of, off-site HW management units to be used, if applicable;
- A detailed description of the steps needed to remove or decontaminate all HW residues and contaminated containment system components, equipment, structures, and soils during partial and final closure, including, but not limited to, procedures for cleaning equipment and removing contaminated soils, methods for sampling and testing surrounding soils, and criteria for determining the extent of decontamination required to satisfy the closure performance standard;
- A detailed description of other activities necessary during the closure period to ensure that all partial and final closures satisfy the closure performance standards, including, but not limited to, groundwater monitoring and leachate collection; and
- A schedule for closure of each HW tank and final closure of the facility (the schedule must include, at a minimum, the total time required to close each HW tank and the time required for intervening activities to allow for tracking the progress of partial and final closure).

Step 3 If the tank system does not meet the requirements of 40 CFR 264/265.193(b) through (f) for secondary containment, and has not been granted a variance from the secondary containment requirements in accordance with 40 CFR 264/265.193(g), then a contingent plan for post-closure care is required. See Chapter 7, "Secondary Containment Requirements," Module A for the applicable requirements from 40 CFR 264/265.193(b) through (f); see Module B in Chapter 7 for the requirements from 40 CFR 264/265.193(g).

Figure 10.1: HW Tank Closure Requirements - continued



Step 4 In addition to the plan for complying with the requirements for closure as a tank system, the site must also have a separate contingent plan for closure as a landfill. The contingent closure plan for closing as a landfill must be prepared and submitted as part of the permit application.

Step 5 In addition to the contingent closure plan, a contingent post-closure plan, which meets all of the post-closure requirements for landfills under 40 CFR 264/265.110 through 120, must be prepared. Closing as a landfill is covered in Module B of this chapter.

Step 6 Amendments to the closure plan must be made when:

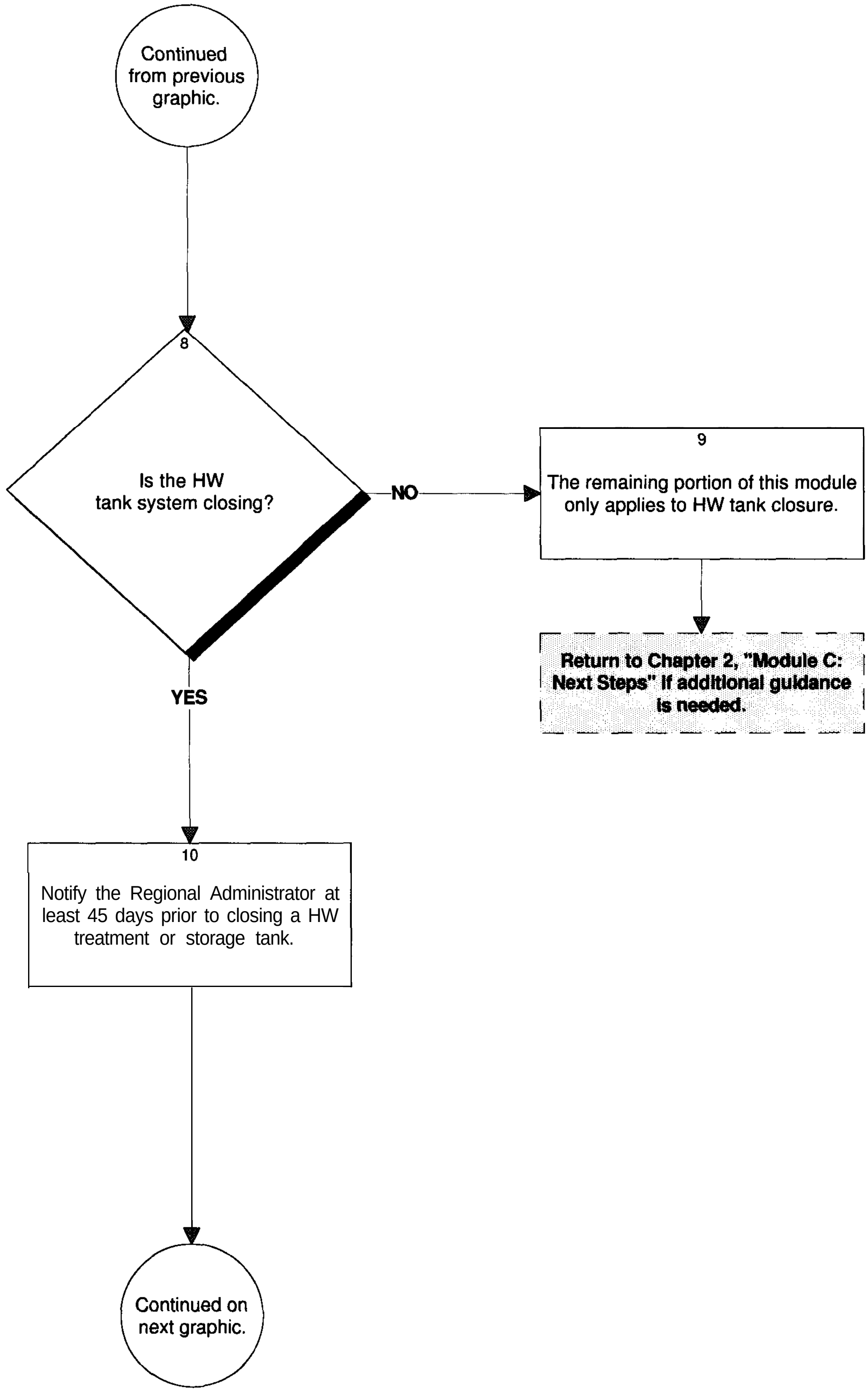
- Changes in operating plans or facility design affect the closure plan; or
- There is a change in the expected year of closure, if applicable; or
- In conducting partial or final closure activities, unexpected events require a modification of the approved closure plan.

Also, the Regional Administrator may request modifications to the plan.

Step 7 The owner or operator must submit a written request, or request a permit modification, to authorize a change in the approved closure plan. The written request must include a copy of the amended closure plan for review or approval by the Regional Administrator. Specifically, the owner or operator must:

- Submit a written request or permit modification to the Regional Administrator to amend the closure plan at any time prior to the notification of partial or final closure of the facility;
- Submit a written request or permit modification including a copy of the amended closure plan for approval at least 60 days prior to the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred that has affected the closure plan; or
- Submit the modified plan or request a permit modification no later than 30 days after any unexpected event occurs during partial or final closure.

The Regional Administrator will approve, disapprove, or modify the amended plan. The approved closure plan will become a condition of any RCRA permit issued. If changes are being made because of a request from the Regional Administrator, the owner or operator must submit the modified plan within 60 days of the Regional Administrator's request, or within 30 days if the change in facility conditions occurs during partial or final closure. Any such modifications are subject to approval by the Regional Administrator.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8
Is the HW tank system closing?
NO
9
The remaining portion of this module only applies to HW tank closure.
Return to Chapter 2, "Module C: Next Steps" if additional guidance is needed.
YES
10
Notify the Regional Administrator at least 45 days prior to closing a HW treatment or storage tank.
Continued on next graphic.

Step 8 The rest of this flowchart only applies to tank systems that are expected to be closed.

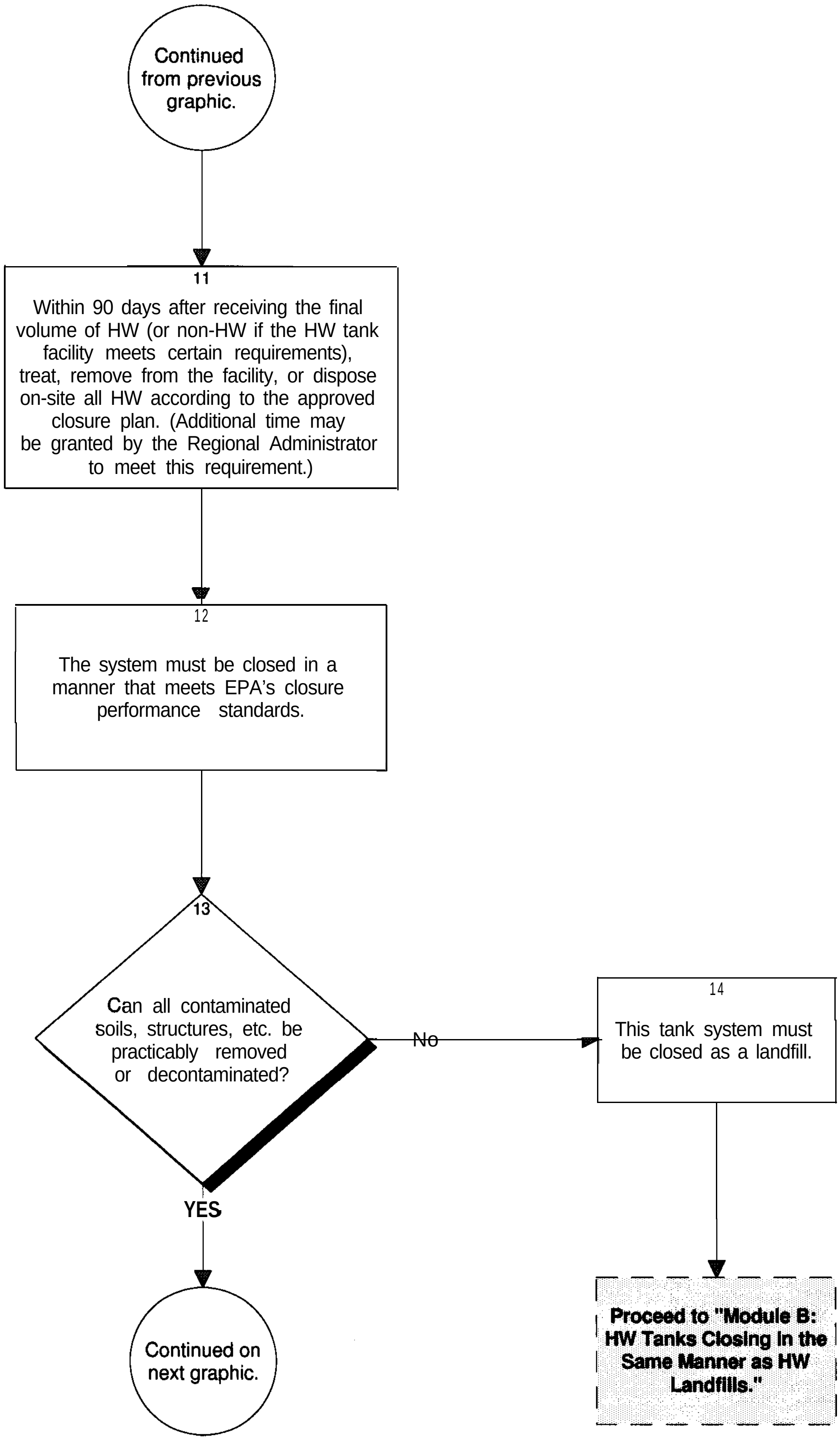
Step 9 Subsequent steps in this flowchart do not apply to tank systems that are not closing. The user of this guidance should return to Chapter 2 to determine if all other tank management requirements have been met.

Step 10 The owner or operator must notify the Regional Administrator in writing at least 45 days prior to the date on which he or she expects to begin final closure of a facility with only HW treatment or storage tanks, container storage, or incinerators. The date when "closure is expected to begin" must be:

- No later than 30 days after the date on which any HW tank receives the known final volume of HW; or
- If there is a reasonable possibility that the HW tank will receive additional HW, no later than one year after the date on which the HW tank received the most recent volume of HWs.

If the owner or operator of a HW tank can demonstrate to the Regional Administrator that the HW tank or facility has the capacity to receive additional HWs and that all steps have been taken to prevent threats to human health and the environment (including compliance with all applicable permit requirements), the Regional Administrator may approve an extension to this one-year limit. The owner or operator must submit his closure plan to the Regional Administrator no later than 15 days after:

- Termination of interim status except when a permit is issued simultaneously with termination of interim status; or
- Issuance of judicial decree or final order under Section 3008 of RCRA to cease receiving HWs or close.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11
Within 90 days after receiving the final volume of HW (or non-HW if the HW tank facility meets certain requirements), treat, remove from the facility, or dispose on-site all HW according to the approved closure plan. (Additional time may be granted by the Regional Administrator to meet this requirement.)
12
The system must be closed in a manner that meets EPA's closure performance standards.
13
Can all contaminated soils, structures, etc. be practicably removed or decontaminated?
No
14
This tank system must be closed as a landfill.
YES
Continued on next graphic.
Proceed to "Module B: HW Tanks Closing in the Same Manner as HW Landfills."

Step 11 The Regional Administrator may approve a HW treatment, removal, or disposal time period in excess of 90 days if the owner or operator complies with all applicable requirements for requesting a modification to the permit and demonstrates that:

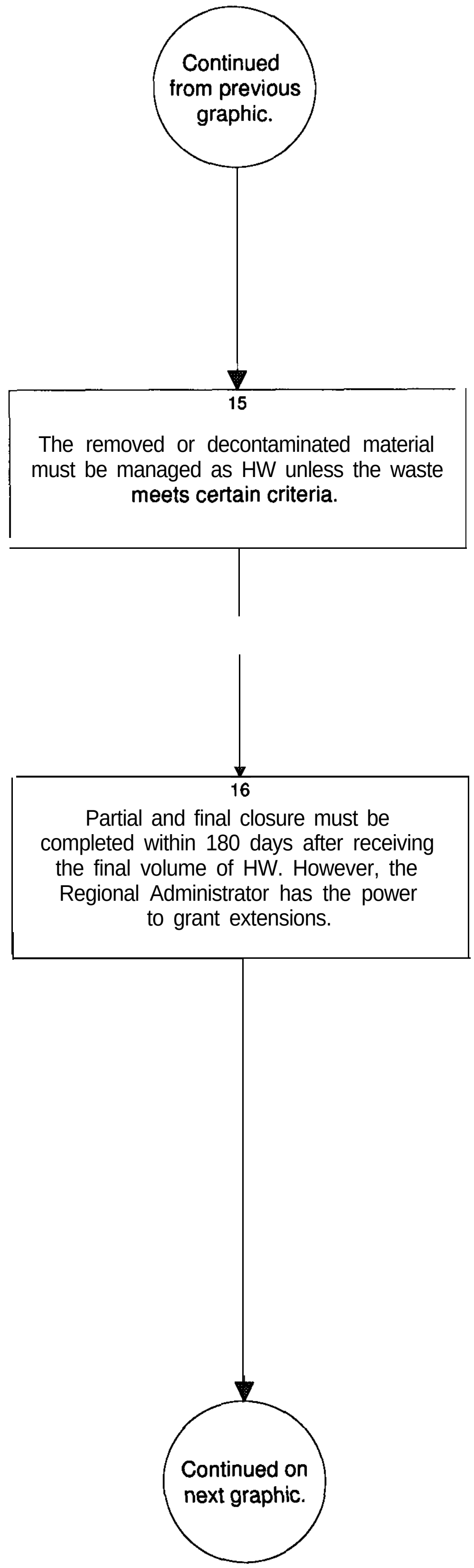
- Required waste handling activities will take longer than 90 days to complete; or
- The HW management unit or facility has the capacity to receive additional HWs, or has the capacity to receive non-HWs if the owner or operator complies with Step 10 of this module; and
  - There is a reasonable likelihood that owner/operator or another person will recommence operation of the HW management unit or the facility within one year; and
  - Closure of the HW management unit or facility would be incompatible with continued operation of the site, and all steps have been and will continue to be taken to prevent threats to human health and the environment, including compliance with all applicable permit requirements.

Step 12 The owner or operator must close the facility in a manner that:

- Minimizes the need for further maintenance;
- Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of HW, hazardous constituents, leachate, contaminated run-off, or HW decomposition products to the ground or surface waters or to the atmosphere; and
- Complies with the applicable closure requirements specified in this chapter.

Step 13 For a tank system to be closed as a **tank system** instead of a **landfill**, the owner or operator must assure clean closure by removing or decontaminating all HW residues as well as all containment system components (liners, etc.), contaminated soils, structures, and equipment contaminated with HW, and then manage them as HW, unless those contaminated materials are not considered HW per the criteria set forth in 40 CFR 261.3(d).

Step 14 If the owner or operator demonstrates that not all contaminated soils can be practicably removed or decontaminated as required in 40 CFR 264/265.197(a), then the owner or operator must close the tank system and perform post-closure care in accordance with the closure and post-closure care requirements that apply to **landfills** (40 CFR 264/265.310 (Closure and Post-closure Care)). In addition, for the purposes of closure and post-closure, such a tank system is then considered to be a landfill, and the owner or operator must meet all of the requirements for landfills specified in Module B of this chapter.


Continued from previous graphic.
15
The removed or decontaminated material must be managed as HW unless the waste meets certain criteria.
16
Partial and final closure must be completed within 180 days after receiving the final volume of HW. However, the Regional Administrator has the power to grant extensions.
Continued on next graphic.

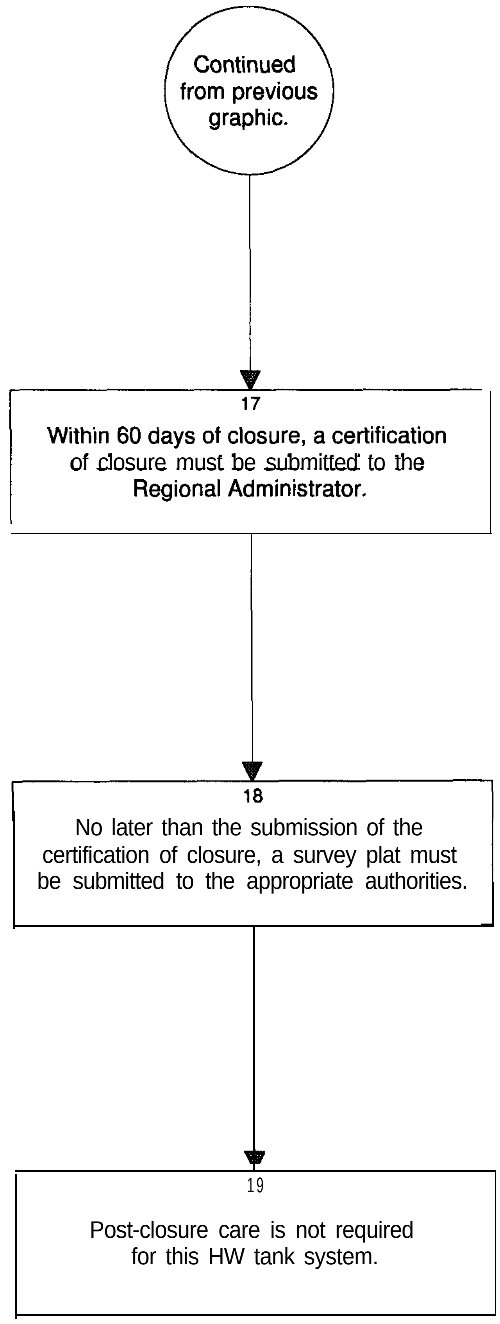
Step 15 By removing any HW or hazardous constituents during partial and final closure, the owner or operator may become a generator of HW and must handle that waste in accordance with all applicable requirements.

However, the generated waste may meet the following criteria listed in 40 CFR 261.3(d) that may allow it to be excluded from management as a HW:

- In the case of any solid waste, it does not exhibit any of the characteristics of hazardous waste identified in 40 CFR 261 Subpart C (although wastes that exhibit a characteristic at the point of generation may still be subject to the requirements of 40 CFR Part 268, even if they no longer exhibit a characteristic at the point of land disposal - this would apply to certain restricted wastes that may be land disposed only if an extract of the waste or of the treatment residue of the waste does not exceed the valves provided by 40 CFR 268.41); and
- In the case of a waste which is a listed waste under 40 CFR 261 Subpart D, contains a waste listed under 40 CFR 261 Subpart D, or is derived from a waste listed in 40 CFR Part 261 Subpart D, it also has been excluded from 40 CFR 261.3(c) under 40 CFR 260.20 (General: Rulemaking Petitions) and 260.22 (Petitions to Amend Part 261 to Exclude a Waste Produced at a Particular Facility).

Step 16 The Regional Administrator may approve an extension to the 180-day closure period if the owner or operator complies with all applicable requirements and demonstrates that:

- The partial or final closure activities will, of necessity, take longer than 180 days to complete; or
  - The HW tanks or facility has the capacity to receive additional HW; or
  - There is reasonable likelihood that someone will recommence operation of the HW management unit or the facility within one year; or
  - Closure of the HW tanks or facility would be incompatible with continued operation of the site; and
- All steps have been and will continue to be taken to prevent threats to human health and the environment, including compliance with all applicable permit requirements.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17
Within 60 days of closure, a certification of closure must be submitted to the Regional Administrator.
18
No later than the submission of the certification of closure, a survey plat must be submitted to the appropriate authorities.
19
Post-closure care is not required for this HW tank system.

Step 17 Within 60 days of completion of closure of each HW tank and within 60 days of the completion of final closure, the owner or operator must submit to the Regional Administrator, by registered mail, a certification that the HW tank(s) or facility, as applicable, has been closed in accordance with the specifications in the approved closure plan. The certification must be signed by the owner or operator and by an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the Regional Administrator upon request.

Step 18 No later than the submission of the certification of closure of each HW disposal unit, the owner or operator must submit to the local zoning authority, or the authority with jurisdiction over local land use for the areas surrounding the DOE property, and to the Regional Administrator, a survey plat indicating the location and dimensions of HW disposal units with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor. The plat filed with the local zoning authority, or the authority with jurisdiction over local land use, must contain a note, prominently displayed, that states the owner's or operator's obligation to restrict disturbance of the HW disposal unit in accordance with the applicable closure and post-closure regulations.

Step 19 Post-closure care **is not** applicable to tank systems that meet the requirements for a clean closure (i.e., those tanks from which all contaminated soils have been removed or decontaminated.)

If the property is intended for eventual sale or transfer, refer to the DOE/OEG publication, "RCRA and CERCLA Requirements Associated with the Sale or Transfer of DOE Property." [20]

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10.3 Module B: HW Tanks Closing in the Same Manner as HW Landfills

10.3.1 Introduction

HW tanks must be closed in the same manner as HW landfills when **all** HW contaminated soils, structures, etc., cannot be removed or decontaminated. These more stringent requirements have been designed to ensure that the closed HW tank will not pollute the environment or pose a health hazard to the local community.

10.3.2 Milestones

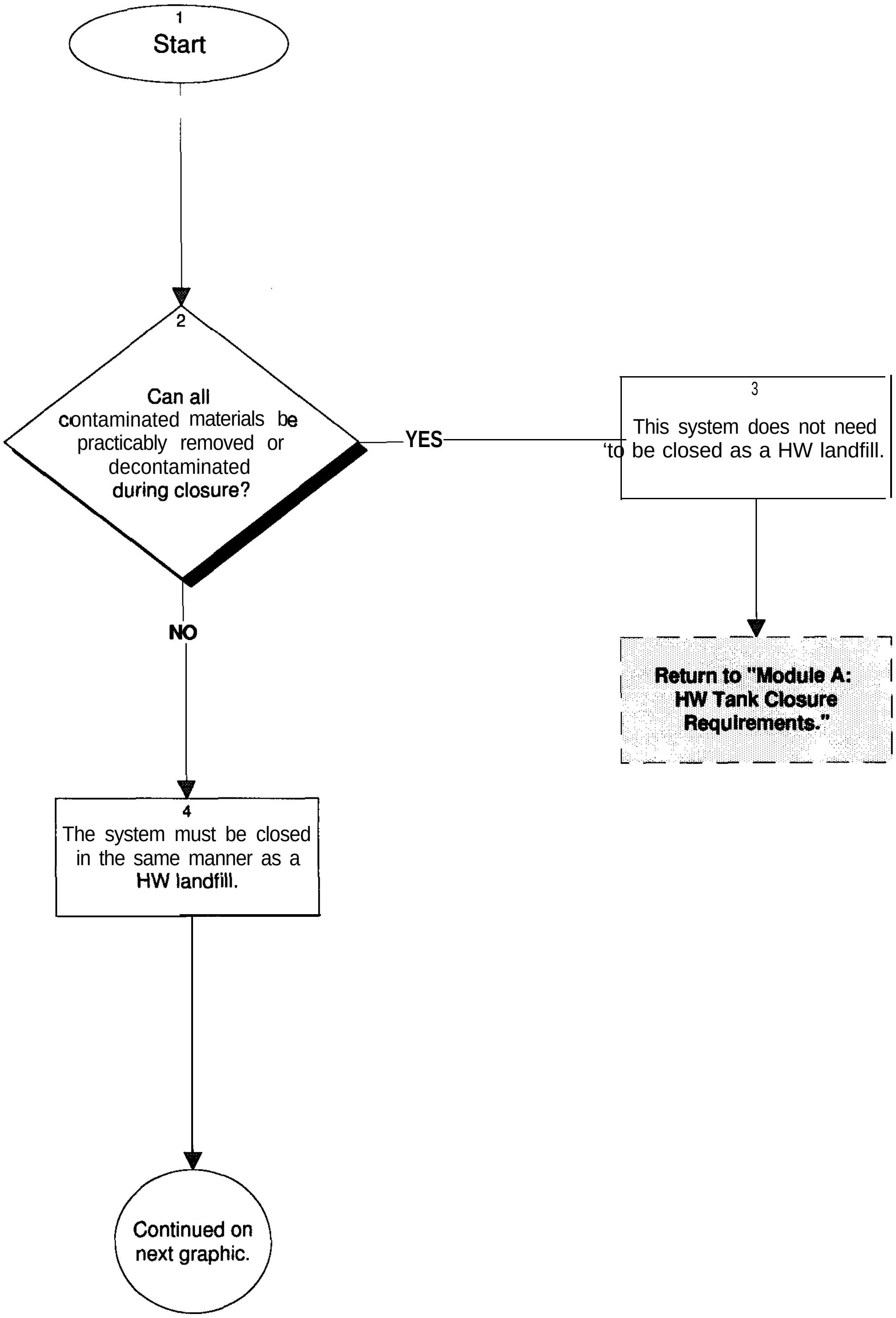
Is the closure and post-closure care of the HW tank in compliance with the HW landfill requirements?

Each tank closed in the same manner as a HW landfill must comply with all of the following:

- The tank must be covered with an adequate final cover;
- The closure certification must be submitted;
- All post-closure requirements (e.g., security measures, deed notation) must be met; and
- Adequate leak detection measures must be implemented.

This flowchart provides the procedures for closing and providing post-closure care to HW tanks when all contaminated soils and structures cannot be decontaminated or removed (i.e., tanks that are closing in the same manner as HW landfills).

Figure 10.2: HW Tanks Closing in the Same Manner as HW Landfills



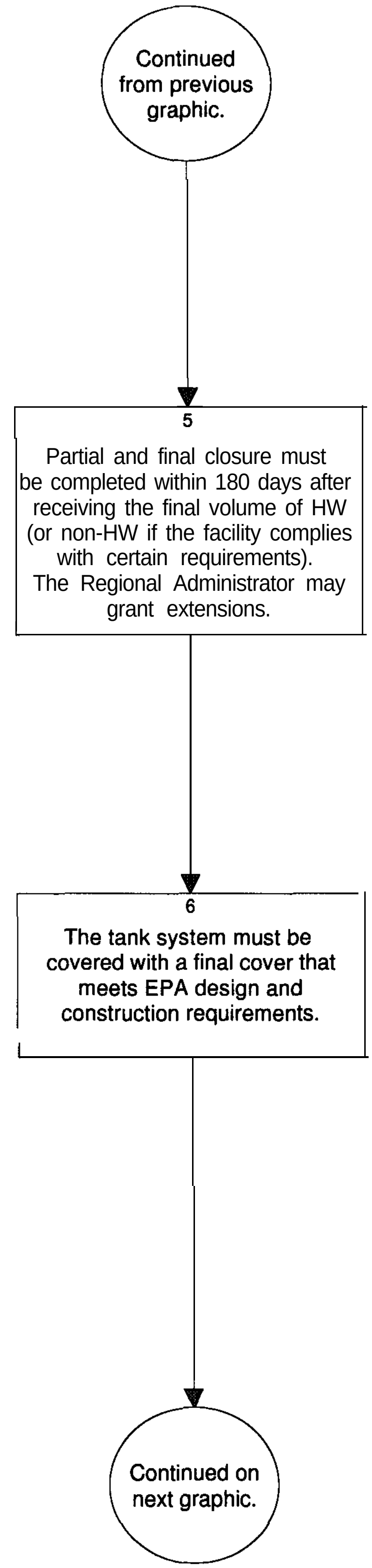
Step 1 Start

Step 2 To safely close a HW tank, the owner or operator must remove or decontaminate **all** HW residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste.

Step 3 This tank may close as a **HW tank**, rather than as a **landfill**. Return to "Module A: HW Tank Closure Requirements."

Step 4 If the owner or operator demonstrates that not all contaminated materials can be practicably removed or decontaminated as required, then the owner or operator must close the tank system and perform post-closure care in accordance with the closure and post-closure care requirements that apply to **landfills** (40 CFR 264/265.310 and 264/265.110-120).

Figure 10.2: HW Tanks Closing in the Same Manner as HW Landfills - continued



Step 5 The Regional Administrator may approve an extension to the 180-day closure period if the owner or operator demonstrates that:

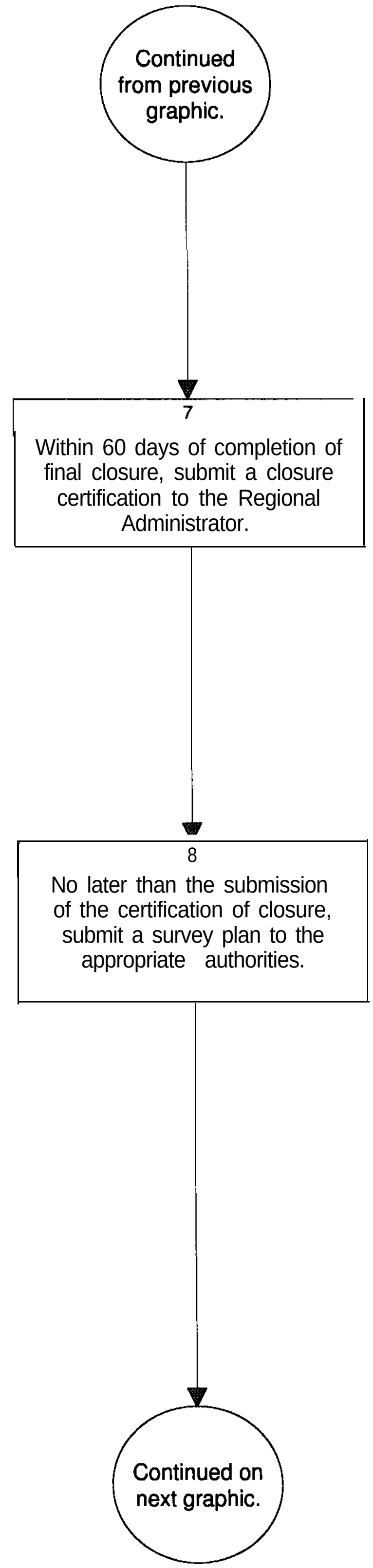
- The partial or final closure activities will take longer than 180 days to complete; or
  - The HW tank(s) or facility has the capacity to receive additional HWs, or has the capacity to receive non-HWs if the owner or operator complies with 40 CFR 264/265.113(d) and (e) (Closure: time allowed for closure); or
  - There is reasonable likelihood that the operator or another person will recommence operation of the HW tanks or the facility within one year; and
  - Closure of the HW tank(s) or facility would be incompatible with continued operation of the site; or
- All steps have been and will continue to be taken to prevent threats to human health and the environment from the unclosed but not operating HW management unit or facility, including compliance with all applicable permit requirements.

Paragraphs (d) and (e) of 40 CFR 264/265.113 apply to landfills, land treatment units, and surface impoundments. They require certain permit modifications, as well as demonstrations that non-hazardous waste is likely to be placed in the unit, that the non-hazardous wastes are not incompatible with wastes already in the unit, that closure of the unit would be incompatible with facility operations, and that the owner/operator is in compliance with all permit requirements.

If any HWs or hazardous constituents are removed during partial and final closure, the owner or operator may become a generator of HW and must handle that HW in accordance with all applicable requirements of 40 CFR Part 262 (Standards Applicable to Generators of HW).

Step 6 At final closure, the owner or operator must cover the landfill (HW tank) with a final cover designed and constructed to:

- Provide long-term minimization of liquid migration through the closed tank;
- Function with minimum maintenance;
- Promote drainage and minimize erosion or abrasion of the cover;
- Accommodate settling and subsidence so that the cover's integrity is maintained; and
- Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.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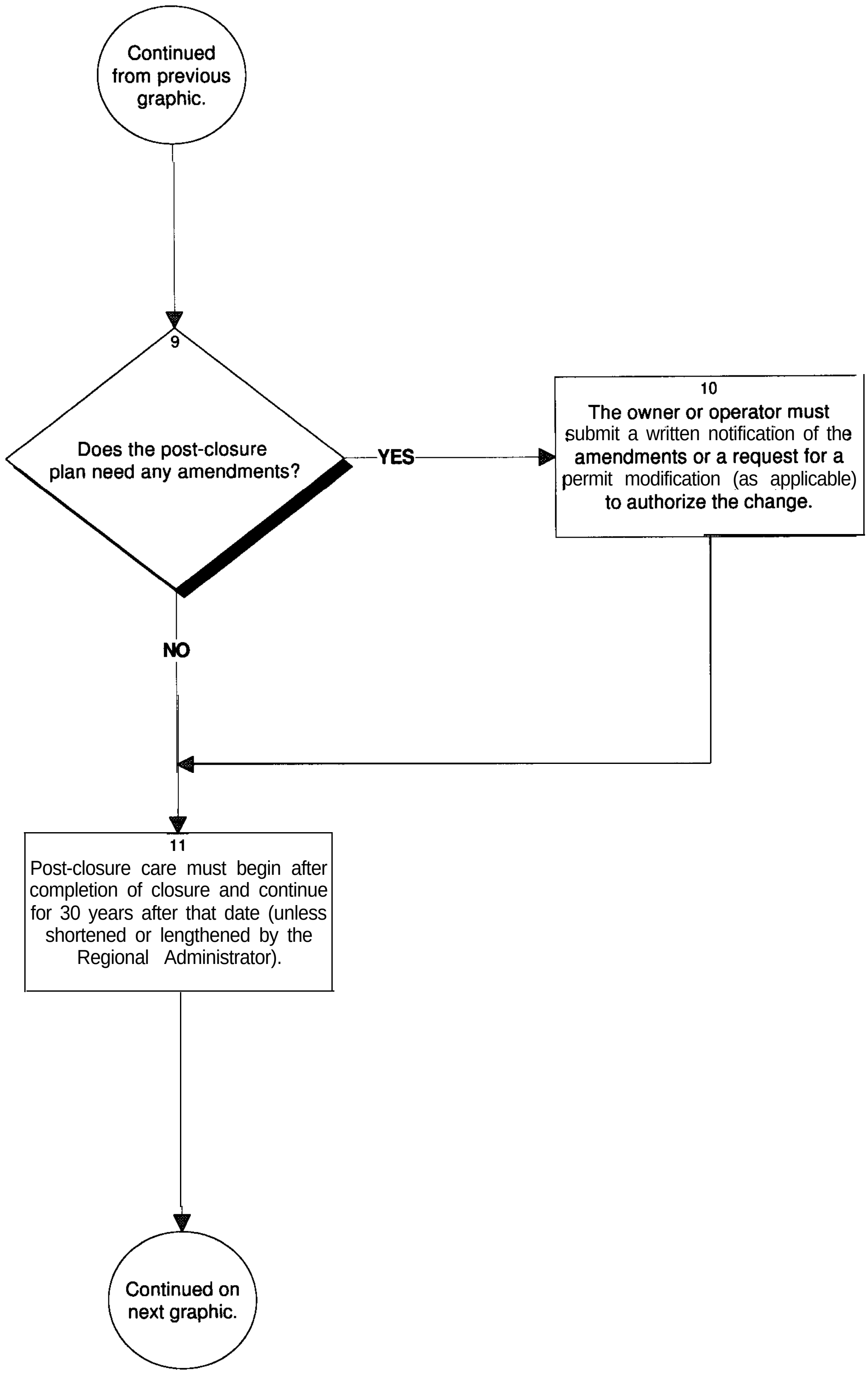
7
Within 60 days of completion of final closure, submit a closure certification to the Regional Administrator.
8
No later than the submission of the certification of closure, submit a survey plan to the appropriate authorities.
Continued on next graphic.

Step 7 Within 60 days of completion of closure of each HW tank system being closed as a landfill unit, and within 60 days of the completion of final closure, the owner or operator must submit to the Regional Administrator, by registered mail, a certification that the HW management unit or facility, as applicable, has been closed in accordance with the specifications in the approved closure plan.

The certification must be signed by the owner or operator and by an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the Regional Administrator upon request until he/she releases the owner or operator from the financial assurance requirements for closure under 40 CFR 264/265.143(i).

Step 8 A survey plat indicating the location and dimensions of landfills, cells, or other HW disposal units with respect to permanently surveyed benchmarks must be submitted to the local zoning authority, or to the authority with jurisdiction over local land use, and to the Regional Administrator. This plat must be prepared and certified by a professional land surveyor. The plat must be filed with the local zoning authority, or with the authority with jurisdiction over local land use, and must contain a note, prominently displayed, that states the owner's or operator's obligation to restrict disturbance of the HW disposal unit in accordance with the applicable 40 CFR 264/265.110-120 regulations.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9
Does the post-closure plan need any amendments?
YES
10
The owner or operator must submit a written notification of the amendments or a request for a permit modification (as applicable) to authorize the change.
NO
11
Post-closure care must begin after completion of closure and continue for 30 years after that date (unless shortened or lengthened by the Regional Administrator).
Continued on next graphic.

Step 9 Amendments to the post-closure plan must be made when:

- Changes in operating plans or facility design affect the approved post-closure plan;
- There is a change in the expected year of final closure, if applicable;
- Events that occur during the active life of the facility, including partial and final closures, affect the approved post-closure plan; or
- The Regional Administrator requests modifications to the plan.

Step 10 The written notification or request that complies with the following must include a copy of the amended post-closure plan for review or approval by the Regional Administrator:

- The owner or operator may submit a request to amend the post-closure plan at any time during the active life of the facility or during the post-closure care period; and
- The owner or operator must submit a written request for plan approval at least 60 days before the proposed change in facility design or operation, or no later than 60 days after an unexpected event has occurred that has affected the post-closure plan. The Regional Administrator will approve, disapprove, or modify the plan. The approved post-closure plan will become a permit condition.

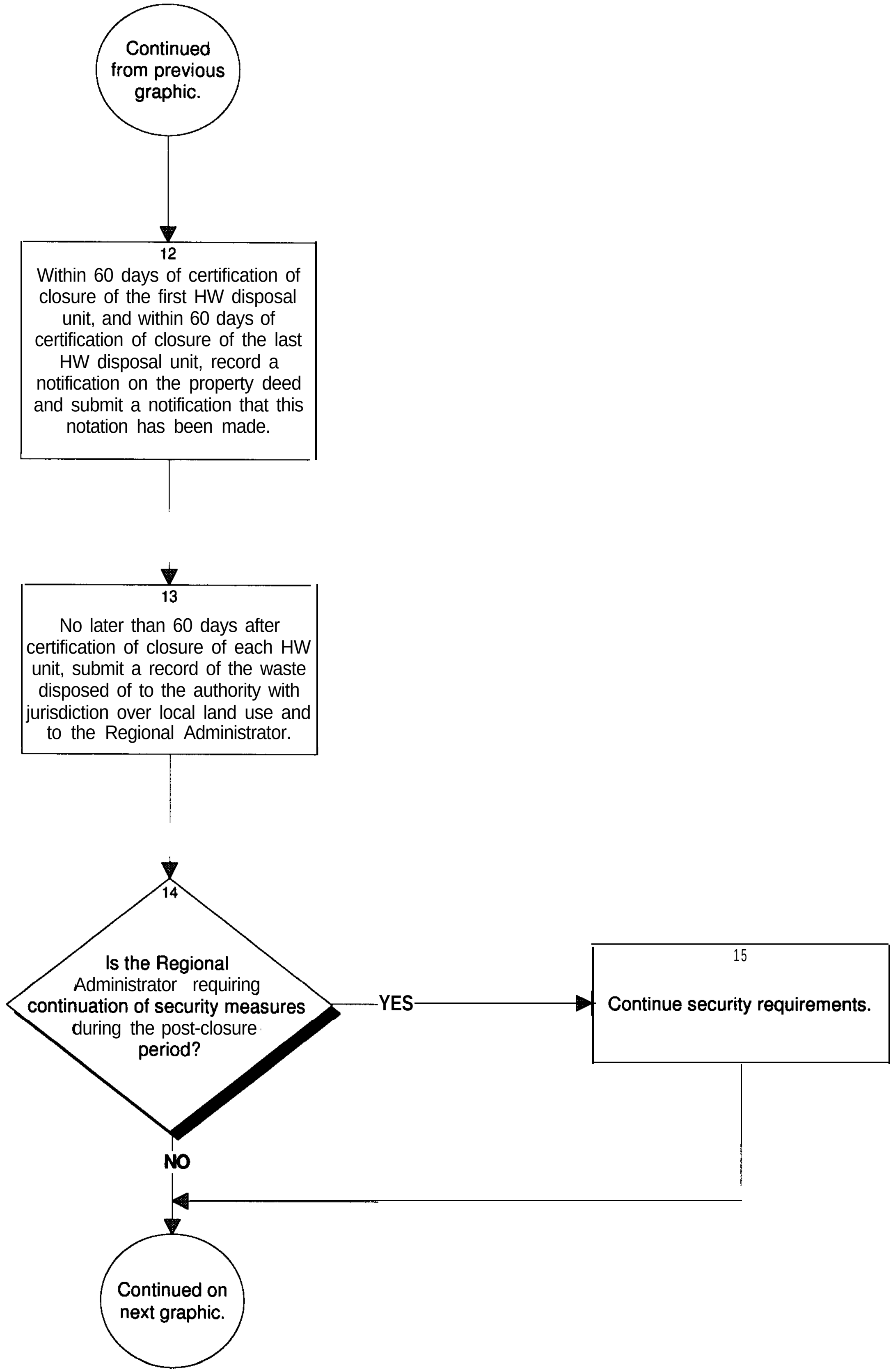
The Regional Administrator may request modifications to the plan. The owner or operator must submit the modified plan no later than 60 days after the Regional Administrator's request for approval, disapproval, or modification.

Step 11 Post-closure care for each HW tank must begin after completion of closure of the unit, must continue for **30 years** after that date, and must consist of at least the following:

- Monitoring, maintenance, and reporting of waste containment systems in accordance with the requirements of Subparts F (Releases From Solid Waste Management Units) and N (Landfills) of 40 CFR Part 264.

Any time preceding partial closure of a HW management unit subject to post-closure care requirements or final closure, or any time during the post-closure period for a particular unit, the Regional Administrator may:

- **Shorten** the post-closure care period applicable to the HW management unit, or facility (1) if all disposal units have been closed, or (2) if the reduced period is sufficient to protect human health and the environment (e.g., groundwater monitoring results; characteristics of the HWs; or alternative disposal, treatment, or re-use techniques indicate that the HW management unit or facility is secure); or
- **Extend** the post-closure care period applicable to the HW management unit or facility if it is necessary to protect human health and the environment.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12
Within 60 days of certification of closure of the first HW disposal unit, and within 60 days of certification of closure of the last HW disposal unit, record a notification on the property deed and submit a notification that this notation has been made.
13
No later than 60 days after certification of closure of each HW unit, submit a record of the waste disposed of to the authority with jurisdiction over local land use and to the Regional Administrator.
14
Is the Regional Administrator requiring continuation of security measures during the post-closure period?
YES
15
Continue security requirements.
NO
Continued on next graphic.

Step 12 Within 60 days of certifying the closure of the first HW disposal unit, and also within 60 days of certifying the closure of the last HW disposal unit, the owner or operator must:

- Record a notation on the deed to the facility property--or on some other instrument that is normally examined during title search--that will in perpetuity notify any potential purchaser of the property that:
  - The land has been used to manage HW; and
  - Its use is restricted under 40 CFR Subpart G regulations; and
  - The survey plat and record of the type, location, and quantity of HW disposed within each HW disposal unit of the facility have been filed with the local zoning authority or the authority with jurisdiction over local land use and with the Regional Administrator; and
- Submit a certification, signed by the owner or operator, that he/she has recorded the notation specified above, including a copy of the document in which the notation has been placed, to the Regional Administrator.

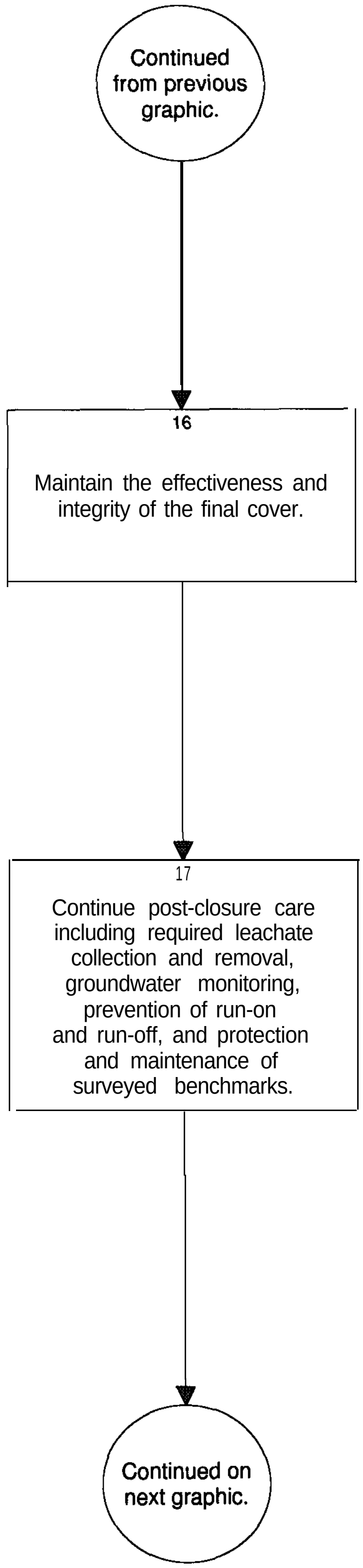
Step 13 No later than 60 days after certification of closure of each hazardous waste disposal unit, the owner or operator must submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Regional Administrator a record of the type, location, and quantity of HWs disposed of within each disposal unit of the facility. For HWs that were disposed of before January 12, 1981, the owner or operator must identify the type, location, and quantity of the HW to the best of his or her knowledge and in accordance with any records that were kept.

Step 14 The Regional Administrator may require, at partial and final closure, continuation of any of the security requirements of 40 CFR 264/265.14 (see Step 15) during part or all of the post-closure period when:

- HWs may remain exposed after completion of partial or final closure; or
- Access by the public or domestic livestock may pose a hazard to human health.

Step 15 The owner or operator must:

- Prevent the unknowing or unauthorized entry of persons or animals onto the active facility;
- Monitor the facility with a 24-hour surveillance system; and
- Post "Danger - Unauthorized Personnel Keep Out" signs at each facility entrance.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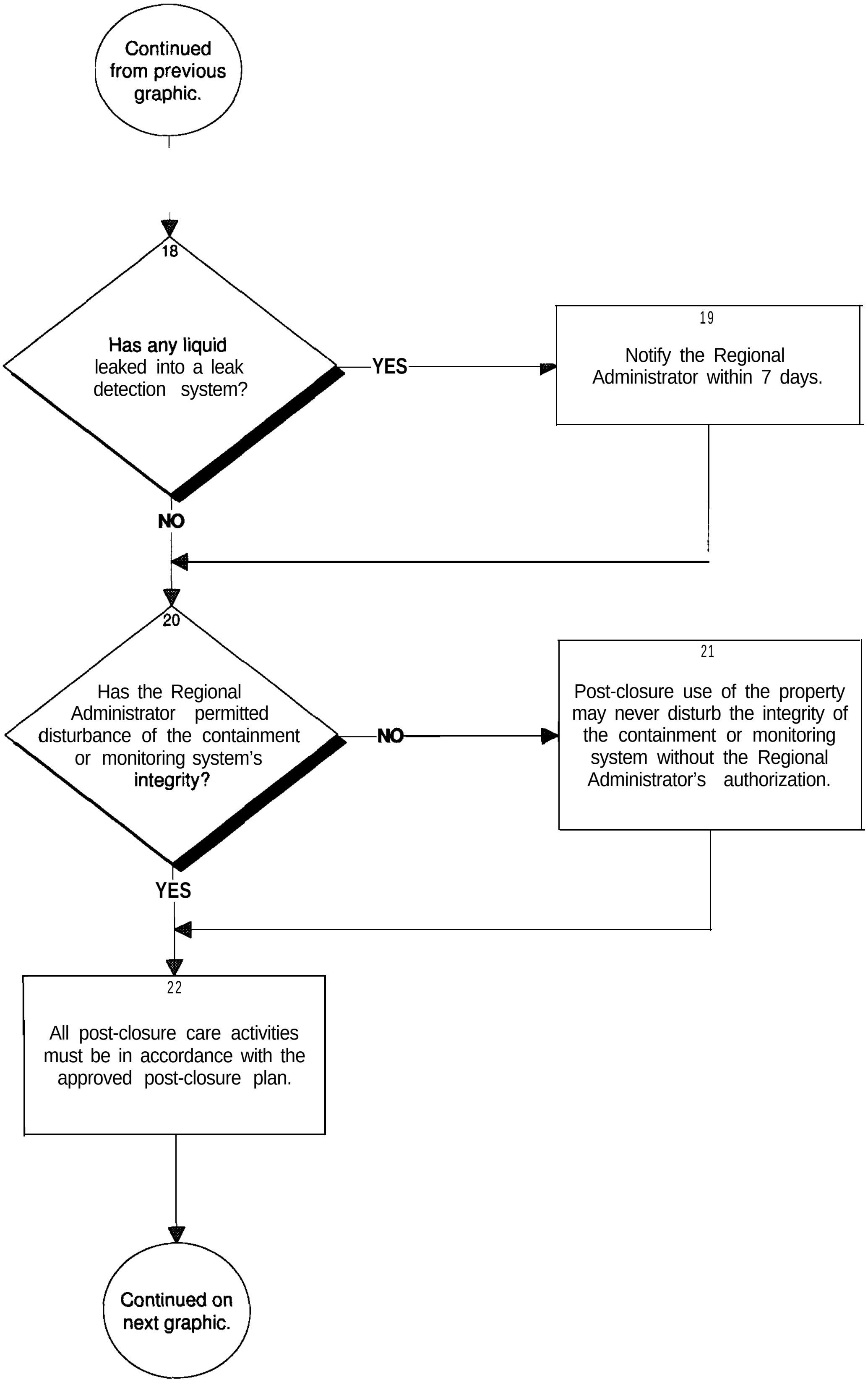
16
Maintain the effectiveness and integrity of the final cover.
17
Continue post-closure care including required leachate collection and removal, groundwater monitoring, prevention of run-on and run-off, and protection and maintenance of surveyed benchmarks.
Continued on next graphic.

Step 16 The owner or operator must maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events.

Step 17 Landfills require special post-closure care. In addition to all general post-closure requirements contained in 40 CFR 264/265.117 through 264/265.120 (as determined by the post-closure plan), the owner or operator of a hazardous waste tank that has closed as a landfill must:

- Continue to operate the leachate collection and removal system until leachate is no longer detected;
- Maintain and monitor the groundwater monitoring system and comply with all applicable requirements of 40 CFR 264/265.90-101 regarding release from solid waste management units;
- Prevent run-on and run-off from eroding or otherwise damaging the final cover; and
  Protect and maintain surveyed benchmarks used in complying with 40 CFR 264/265.309, which requires the surveying and recording of depth, location, and contents of landfill cells.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18
Has any liquid leaked into a leak detection system?
YES
19
Notify the Regional Administrator within 7 days.
NO
20
Has the Regional Administrator permitted disturbance of the containment or monitoring system's integrity?
NO
21
Post-closure use of the property may never disturb the integrity of the containment or monitoring system without the Regional Administrator's authorization.
YES
22
All post-closure care activities must be in accordance with the approved post-closure plan.
Continued on next graphic.

Step 18 The leak detection system must be capable of detecting, collecting, and removing at the earliest practicable time leaks of hazardous constituents through any areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The design criteria for this system are outlined in 40 CFR 264.301(c)(3).

Step 19 During the post-closure care period, if liquid leaks into a leak detection system, the owner or operator must notify the Regional Administrator of the leak in writing within **seven** days after detecting the leak. The Regional Administrator will modify the permit to require compliance with the requirements of 40 CFR 264/265 Subpart F (Releases From Solid Waste Management Units).

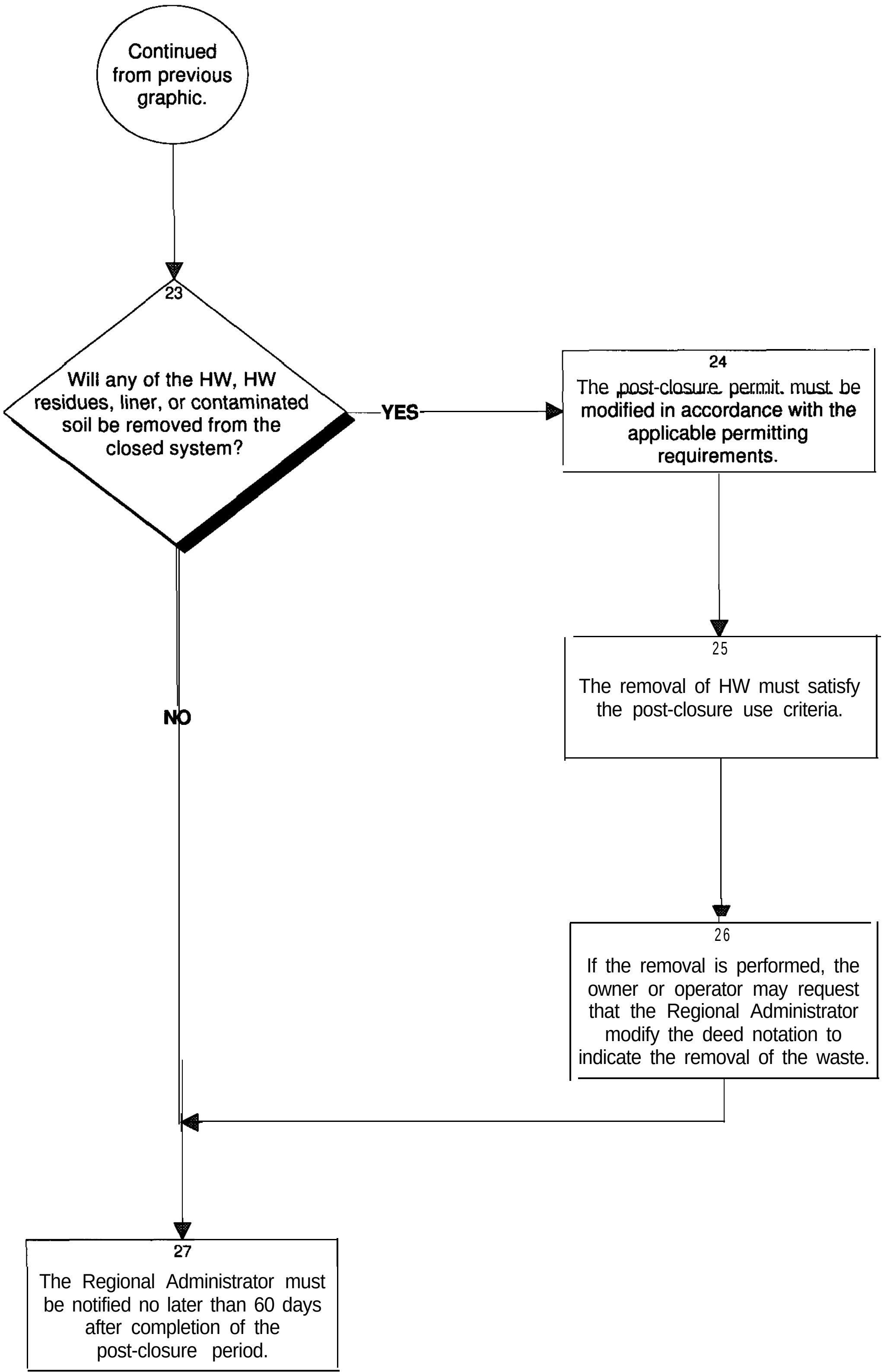
Step 20 According to 40 CFR 264/265.117(c) post-closure use of property on or in which HWs remain after partial or final closure must **never** be allowed to disturb the integrity of the containment system or monitoring systems **unless** the Regional Administrator finds that the disturbance:

- Is necessary to the proposed use of the property and will not increase the potential hazard to human health or the environment; or
- Is necessary to reduce a threat to human health or the environment.

Step 21 Post-closure use of the property may not disturb the integrity of the final cover, liner(s), or any other components of the containment system, or the functioning of the facility's monitoring system.

Step 22 All post-closure care activities must be in accordance with the provisions of the approved post-closure plan.

Figure 10.2: HW Tanks Closing in the Same Manner as HW Landfills - continued



Step 23 The owner or operator or any subsequent owner or operator of the land upon which a HW disposal unit is located may wish to remove HW and HW residues, the liner, or contaminated soils.

Step 24 Removal of HW, HW residues, the liner, or contaminated soils requires a modification to the permit.

Step 25 The owner or operator must demonstrate that the removal of HWs will satisfy the criteria of 40 CFR 264/265.117(c) (see Step 20).

Step 26 If the owner or operator is granted a permit modification or otherwise granted approval to conduct such removal activities, the owner or operator may request that the Regional Administrator approve either:

- The removal of the notation on the deed to the facility property or other instrument normally examined during title search; or
- The addition of a notation to the deed or instrument indicating the removal of the HW.

Step 27 No later than 60 days after completion of the established post-closure care period for each HW disposal unit, the owner or operator must submit to the Regional Administrator, by registered mail, a certification that the post-closure care period for the HW disposal unit was performed in accordance with the specifications in the approved post-closure plan. The certification must be signed by the owner or operator and an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the Regional Administrator upon request.

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Appendix A

Glossary

Appendix A
Glossary

Aboveground tank	A device meeting the definition of "tank" in 40 CFR 260.10 and that is situated in such a way that the entire surface area of the tank is completely above the plane of the adjacent surrounding surface and the entire surface area (including the tank bottom) is able to be visually inspected.
Act (or RCRA)	The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended. [42 U.S.C. Section 6901 et seq.]
Active life of a facility	Active life begins with the initial receipt of hazardous waste at the facility and ends when the Regional Administrator receives certification of final closure.
Active portion	The portion of a facility where treatment, storage, or disposal operations are being or have been conducted after the effective date of 40 CFR 261 and that is not a closed portion. (See also "closed portion" and "inactive portion.")
Administrator	The Administrator of the Environmental Protection Agency, or his or her designee.
Ancillary equipment	Any devices such as piping, fittings, flanges, valves, and pumps, etc., that are used to distribute, meter, or control the flow of hazardous waste from its point of generation to storage or treatment tanks, between hazardous waste storage and treatment tanks to a point of disposal on-site, or to a point of shipment for disposal off-site.
Aquifer	A geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs.
Authorized representative	The person responsible for the overall operation of a facility or an operational unit (i.e., part of a facility), such as the plant manager, superintendent, or person of equivalent responsibility.
Cathodic protection	A technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell.

Certification	A statement of professional opinion based upon knowledge and belief.
Closed portion	The portion of a facility that an owner or operator has closed in accordance with the approved facility closure plan and all applicable closure requirements.
Component	Either the tank or ancillary equipment of a tank system.
Contingency plan	A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment.
Corrosion expert	A person who, by reason of his or her knowledge of the physical sciences and the principles of engineering and mathematics, acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control on buried or submerged metal piping systems and metal tanks.
Designated facility	A hazardous waste treatment, storage, or disposal facility that: • Has received a permit (or interim status) in accordance with the requirements of 40 CFR 270 and 124; • Has received a permit (or interim status) from a State authorized in accordance with 40 CFR Part 271; or • Is regulated under 40 CFR 261.6(c)(2) or Subpart F of Part 266; and • That has been designated on the manifest by the generator pursuant to 40 CFR 260.20. If a waste is destined to a facility in an authorized state that has not yet obtained authorization to regulate that particular waste as hazardous, then the designated facility must be a facility allowed by the receiving state to accept such waste.
Dike	An embankment or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials.

Discharge (or hazardous waste discharge)
The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water.

Disposal
The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or be discharged into any water, including groundwater.

Disposal facility
A facility or part of a facility at which hazardous waste is intentionally placed on land or into water, and at which waste will remain after closure.

Elementary neutralization unit
A device that:

- Is used for neutralizing wastes that are hazardous only because they exhibit the corrosivity characteristic defined in 40 CFR 261.22 or they are listed in Subpart D of 40 CFR Part 261 only for this reason; and
- Meets the definition of tank, tank system, container, transport vehicle, or vessel in 40 CFR 260.10.

EPA hazardous waste number
The number assigned by EPA to each hazardous waste listed in 40 CFR Part 261, Subpart D, and to each characteristic identified in 40 CFR Part 261, Subpart C.

EPA Identification Number
The number assigned by EPA to each generator; transporter; and treatment, storage, or disposal facility.

EPA Region
EPA Region means the states and territories found in any one of the following 10 regions:

- Region I
  Maine, Vermont, New Hampshire, Massachusetts, Connecticut, and Rhode Island.
- Region II
  New York, New Jersey, Commonwealth of Puerto Rico, and the U.S. Virgin Islands.
- Region III
  Pennsylvania, Delaware, Maryland, West Virginia, Virginia, and the District of Columbia.
- Region IV
  Kentucky, Tennessee, North Carolina, Mississippi, Alabama, Georgia, South Carolina, and Florida.

- Region V
  Minnesota, Wisconsin, Illinois, Michigan, Indiana, and Ohio.
- Region VI
  New Mexico, Oklahoma, Arkansas, Louisiana, and Texas.
- Region VII
  Nebraska, Kansas, Missouri, and Iowa.
- Region VIII
  Montana, Wyoming, North Dakota, South Dakota, Utah, and Colorado.
- Region IX
  California, Nevada, Arizona, Hawaii, Guam, American Samoa, Commonwealth of the Northern Mariana Islands.
- Region X
  Washington, Oregon, Idaho, and Alaska.

Equivalent method

Any testing or analytical method approved by the Administrator under 40 CFR 260.20 and 260.21.

Existing portion

That land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit.

Existing tank system or existing component

A tank system or component that is used for the storage or treatment of hazardous waste and that is in operation, or for which installation has commenced on or prior to July 14, 1986. Installation will be considered to have commenced if the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system and if either (1) a continuous on-site physical construction or installation program has begun, or (2) the owner or operator has entered into contractual obligations, which cannot be canceled or modified without substantial loss, for physical construction of the site or installation of the tank system to be completed within a reasonable time.

Facility

All contiguous land and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations thereof).

Federal agency	Any department, agency, or other instrumentality of the Federal Government, any independent agency or establishment of the Federal Government including any Government corporation, and the Government Printing Office.
Final closure	The closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under 40 CFR 264 and 265 are no longer conducted at the facility unless subject to the provisions in 40 CFR 262.34.
Freeboard	The vertical distance between the top of a tank or surface impoundment dike and the surface of the waste contained therein.
Generator	Any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR 261 or whose act first causes a hazardous waste to become subject to regulation.
Groundwater	Water below the land surface in a zone of saturation.
Hazardous waste management unit	A contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples of hazardous waste management units include a surface impoundment; a waste pile; a land treatment area; a landfill cell; an incinerator; a tank; a tank's associated piping; a tank's underlying containment system; and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed.
Hazardous waste constituent	A constituent that caused the Administrator to list waste in in 40 CFR 261, Subpart D, or a constituent listed in Table 1 of 40 CFR 261.24.
Hazardous waste	A solid waste is hazardous if it is not excluded from the hazardous waste regulations, and • It is listed in one of the three lists developed by EPA and contained in the Code of Federal Regulations (CFR) at 40 CFR 261.31-33 (a listed waste); or •It exhibits one or more of four characteristics identified at 40 CFR 261.21-24: "ignitability," "corrosivity," "reactivity," and "toxicity" (a characteristic waste). See Chapter 1, Section 1.2, for these definitions.

Impressed current A means for providing cathodic protection by utilizing the alternating current (AC) electrical power provided at a site. The AC is converted to direct current (DC) by a rectifier attached to the AC power source. The DC output from the rectifier flows to the buried impressed current anode(s), through the soil, and onto the surface of the structure.

In operation A facility that is treating, storing, or disposing of hazardous waste is considered to be in operation.

Inactive portion That portion of a facility that is not operated after November 19, 1980 (the effective date of 40 CFR 261). (See also "active portion" and "closed portion.")

Incompatible waste A hazardous waste that is unsuitable for:

- Placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container inner liners or tank walls); or
- Commingling with another waste or material under uncontrolled conditions because the commingling might produce heat or pressure; fire or explosion; violent reaction; toxic dusts, mists, fumes, or gases; or flammable fumes or gases.

Individual generation site The contiguous site at or on which one or more hazardous wastes are generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste, but is considered a single or individual generation site if the site or property is contiguous.

Inground tank A device meeting the definition of "tank" in 40 CFR 260.10 whereby a portion of the tank wall is situated to any degree within the ground, thereby preventing visual inspection of that external surface area of the tank that is in the ground.

Inherently waste-like Inherently waste-like materials are listed in 40 CFR 261.2(d). They are a set of specific materials that are considered RCRA solid wastes under all circumstances, regardless of how they may be handled.

Inner liner A continuous layer of material placed inside a tank or container that protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste.

Installation inspector
A person who, by reason of his knowledge of the physical sciences and the principles of engineering, acquired by a professional education and related practical experience, is qualified to supervise the installation of tank systems.

Interim status
A facility required to have a permit has interim status if, as defined by RCRA Section 3005(e), the facility was in existence on November 19, 1980, or it was in existence on the effective date of statutory or regulatory changes under RCRA Section 3005 which required it to have a permit; and the owner or operator has complied with the requirements of Section 3010(a) and has made an application for a permit. The facility will be treated as having a permit until a final administrative decision is made.

Landfill
A disposal facility or part of a facility where waste is placed in or on land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, or a cave.

Landfill cell
A discrete volume of a waste landfill that uses a liner to provide isolation of wastes from adjacent cells or wastes. Examples of landfill cells are trenches and pits.

Leachate
Any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste.

Leak-detection system
A system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary containment structure. Such a system must employ operational controls (e.g., daily visual inspections for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to detect continuously and automatically the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure.

Liner
A continuous layer of natural or man-made materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate.

Management (or hazardous waste management)	The systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste.
Manifest	The shipping document (EPA Form 8700-22 and, if necessary, EPA Form 8700-22A), originated and signed by the generator in accordance with the instructions included in the Appendix to 40 CFR 262.
Movement	Transportation of hazardous waste to a facility in an individual vehicle.
New tank system or new tank component	A tank system or component that will be used for the storage or treatment of hazardous waste and for which installation has commenced after July 14, 1986. However, for purposes of 40 CFR 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction has commenced after July 14, 1986. (See also "existing tank system.")
On-ground tank	A device meeting the definition of "tank" in 40 CFR 260.10 and that is situated in such a way that the bottom of the tank is on the same level as the adjacent surrounding surface so that the external tank bottom cannot be visually inspected.
On-site	The same or geographically contiguous property that may be divided by a public or private right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection and access is by crossing as opposed to going along the right-of-way. Also considered on-site properties are non-contiguous properties owned by the same person and connected by a right-of-way that the owner controls and to which the public does not have access.
Operator	The person responsible for the overall operation of a facility.
Owner	The person who owns a facility or part of a facility.
Partial closure	The closure of a hazardous waste management unit in accordance with the applicable closure requirements of 40 CFR 264 and 265 at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment systems), landfill cell, surface impoundment, waste pile, or other hazardous waste management unit, while other units of the same facility continue to operate.

Person	An individual, trust, firm, joint stock company, Federal Agency, corporation (including a government corporation), partnership, association, state, municipality, commission, political subdivision of a state, or any interstate body.
Personnel (or facility personnel)	All persons who work at or oversee the operation of a hazardous waste facility and whose actions or failure to act may result in noncompliance with the requirements of 40 CFR 264.
Publicly owned treatment works (or POTW)	Any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature that is owned by a "state" or "municipality" (as defined by Section 502(4) of the CWA). This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.
Reclaim (or reclaimed)	A material is reclaimed if it is processed to recover a usable product or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents.
Regional Administrator	The Administrator for the EPA Region in which the facility is located, or his designee.
Representative sample	A sample of a universe or whole (e.g., waste pile, lagoon, groundwater) that can be expected to exhibit the average properties of the universe or whole.
Run-off	Any rainwater, leachate, or other liquid that drains over land from any part of a facility.
Run-on	Any rainwater, leachate, or other liquid that drains over land onto any part of a facility.
Sacrificial anode	A sacrificial anode is created when two dissimilar metals in the environment are electrically connected to each other. After this occurs, a small current will flow from the more electrically active to the less electrically active metal (e.g., magnesium to zinc or to steel.) By corroding, or sacrificing themselves, the more active metals reverse the flow of current from the structure to which it has been connected, thus protecting the structure from corrosion.
Saturated zone (or zone of saturation)	That part of the earth's crust in which all voids are filled with water.

Sludge
Any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant.

Small quantity generator
A generator who generates between 100 and 1,000 kilograms of hazardous waste in a calendar month.

Solid waste
A solid waste is any material that is discarded by being abandoned (disposed of, burned, or incinerated; or accumulated or treated prior to disposal, burning, or incineration), recycled as specified in 40 CFR 261.2 (c), or considered inherently waste-like as defined in 40 CFR 261.2(d).

State
Any of the several states, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

Storage
The holding of hazardous waste for a temporary period, at the end of which the hazardous waste is to be treated, disposed, or stored elsewhere.

Sump
Any pit or reservoir (and those troughs/trenches connected thereto) that meets the definition of tank and that serves to collect hazardous waste for transport to hazardous waste storage, treatment, or disposal facilities.

Surface impoundment (or impoundment)
A facility or part of a facility that is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials) that is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons.

Tank
A stationary device, designed to contain an accumulation of hazardous waste, that is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) that provide structural support.

Tank system
A hazardous waste storage or treatment tank and its associated ancillary equipment and containment system.

Totally enclosed treatment facility

A facility for the treatment of hazardous waste that is directly connected to an industrial production process and that is constructed and operated in a manner that prevents the release of any hazardous waste or any constituent thereof into the environment during treatment. An example is a pipe in which waste acid is neutralized.

Treatability study

A study in which a hazardous waste is subjected to a treatment process to determine:

- Whether the waste is amenable to the treatment process;
- What pretreatment (if any) is required;
- The optimal process conditions needed to achieve the desired treatment;
- The efficiency of a treatment process for a specific waste or wastes; or
- The characteristics and volumes of residuals from a particular treatment process.

Also included in this definition for the purpose of the 40 CFR 261.4 (e) and (f) exemptions are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies. A "treatability study" is not a means to commercially treat or dispose of hazardous waste.

Treatment

Any method, technique, or process (including neutralization) designed to change the physical, chemical, or biological character or composition of any hazardous waste to neutralize such waste; to reduce waste; to recover energy or material resources from the waste; to make such waste safer to transport, store, or dispose of; to render such waste non-hazardous or less hazardous; or to make such waste amenable for recovery or for storage.

Treatment zone

A soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized.

Underground tank

A device meeting the definition of "tank" in 40 CFR 260.10 whose entire surface area is totally below the surface of, and covered by, the ground.

Unfit-for-use tank system

A tank system that has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release of hazardous waste to the environment.

Unsaturated zone (or zone of aeration)
The zone between the land surface and the water table.

Uppermost aquifer
The geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.

Used or Reused
A material is "used" or "reused" if it is either:

- Employed as an ingredient (including use as an intermediate) in an industrial process to make a product (for example, distillation bottoms from one process used as feedstock in another process). However, a material will not satisfy this condition if distinct components of the material are recovered as separate end products (as when metals are recovered from metal-containing secondary materials); or ●Employed in a particular function or application as an effective substitute for a commercial product (for example, spent pickle liquor used as phosphorous precipitant and sludge conditioner in wastewater treatment).

Wastewater treatment unit
A device that:

- Is part of a wastewater treatment facility that is subject to regulation under either Section 307(b) or 402 of the Clean Water Act; and
- Receives and treats or stores an influent wastewater that is a hazardous waste as defined in 40 CFR 261.3, or that generates and accumulates a wastewater treatment sludge that is a hazardous waste as defined in 40 CFR 261.3, or treats or stores a wastewater treatment sludge that is a hazardous waste as defined in 40 CFR 261.3, and/or
- Meets the definition of tank or tank system in 40 CFR 260.10.

Zone of engineering control
An area under the control of the owner/operator that, upon detection of a hazardous waste release, can readily be cleaned up prior to the release of hazardous waste or hazardous constituents to groundwater or surface water.

Appendix B

Summary Milestones

Appendix B
Summary Milestones

Chapter 2

Module A: Identification of Federally Regulated HW Tanks

Have all Federally regulated hazardous waste tanks been identified?

To determine how HW tanks at your facility are regulated:

- All HWs in tanks must be identified;
- All exempted HW tanks must be identified; and
- The status of the state's regulatory program must be determined.

Module B: Classification of Hazardous Waste Tanks by Age

Have all of the hazardous waste tanks been categorized according to age?

Tanks that meet the following criterion are categorized as "new" tanks:

- Installation of the HW tank commenced after July 14, 1986.

Tanks that meet the following criterion are categorized as "existing" tanks:

- Installation of the HW tank commenced on or before July 14, 1986.

Chapter 3

Module A: Integrity Testing for Existing Tanks

Has the structural integrity of the existing HW tanks been certified?

Existing tanks that lack secondary containment:

- Must have been assessed by January 12, 1988; or
- Must be assessed within 12 months of the date that a non-hazardous waste in a tank is designated as HW by EPA.

Existing HW tanks that were found to be leaking or otherwise unfit for service must be repaired or replaced as necessary before being certified and returned to use.

Chapter 4

Module A: Design, Installation, and Assessment of New Tank Systems or Components

Has the tank been adequately designed, installed, and assessed?

- The design must be adequate to provide safe containment of the HW; and
- The installation and subsequent inspection of the installation must ensure that the installation process has not damaged the HW tank.

Chapter 5

Module A: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks

Is the HW tank exempted from 40 CFR Part 264, Subpart CC regulations?

Exempted tanks include, but are not limited to, those which:

- Are no longer receiving HW after December 6, 1996;
- Are no longer receiving HW and are being closed pursuant to an approved closure plan;
- Are being used for on-site treatment of HW generated as a result of remedial activities; or
- Are being used solely for the management of radioactive mixed waste.

Module B: General Organic Air Emission Control Requirements

Has the owner/operator complied with the general organic air emission control requirements?

After selecting Tank Level 1 or Tank Level 2, the owner/operator must install and operate the appropriate cover or tank type and controls in accordance with unit/cover-specific procedures and operational requirements.

Module C: Requirements for Closed-vent Systems and Control Devices

Has the owner/operator chosen to use a control device other than one described in 40 CFR 264.1087(c)(1)?

- An owner/operator may use a device other than a flare, thermal vapor incinerator, boiler, process heater, condenser, or carbon adsorption system if the device is operated in accordance with 40 CFR 264.1033(j).

Module D: Inspection and Monitoring Requirements

Has the owner/operator developed a written inspection program for all regulated HW tank covers?

All regulated HW tank covers must be maintained in a closed position unless:

- Performing routine inspection, maintenance, or other activities needed for normal operations;
- Removing accumulated sludge or other residues from the tank bottom;
- Opening of a some type of pressure relief device (e.g., conservation vent); or
- Opening of a "safety device" to avoid an unsafe condition..

Module E: Recordkeeping Requirements

Has the owner/operator maintained all records in accordance with 40 CFR 264.1089?

- Unless the regulations state otherwise, all records required by 40 CFR Part 264/265, Subpart CC, must be kept in the facility's operating record for a minimum of 3 years.

Module F: Reporting Requirements

Has an episode of noncompliance occurred?

Noncompliance occurs whenever:

- HW with an average VO concentration equal to or greater than 500 ppmw at the point of waste origination is placed in an exempted tank;
- A treated HW whose organic content has not been sufficiently reduced is placed in an exempted HW tank;
- A control device has emissions exceeding the applicable operating values; or
- A flare operates with visible emissions.

Chapter 6

Module A: Operating Requirements

Have proper operating procedures been implemented?

The following elements must be completed to safely operate HW tanks:

- Proper spill prevention procedures and equipment must be utilized; and
- All ignitable, reactive, or incompatible HWs must be neutralized before placement in tanks (unless placement is in response to an emergency situation).

Module B: Inspection Requirements

Has an adequate inspection program been implemented?

- Many components of the HW tank system require inspection on a daily basis; and
- Proper documentation in the facility's inspection log is required.

Chapter 7

Module A: Secondary Containment Requirements

Does the HW tank have adequate secondary containment?

The secondary containment chosen for the HW tank must be:

- One listed in 40 CFR 264/265.193; or
- An equivalent device approved by a Regional Administrator of the EPA.

Module B: Secondary Containment: Variance Requirements

Does the owner or operator wish to obtain a variance from the secondary containment requirements?

To obtain a variance, the owner or operator must be able to demonstrate to a Regional Administrator of the EPA that the alternative design will:

- Prevent the migration of any HW into the groundwater and/or surface water at least as effectively as secondary containment; or
- Assure that if a release of HW does migrate to groundwater and/or surface water, the release would not pose a substantial present or potential hazard to human health or the environment.

Module C: Responding to Releases from HW Tanks that have Received a Variance

Has a release occurred from a HW tank for which a variance has been granted?

- If the variance is **technology-based**, the owner or operator must determine whether or not the release has migrated beyond the zone of engineering control before formulating a response to the release; or
- If the variance is **risk-based**, the owner or operator does not have to make the same release-migration determination as described above. Instead, the owner or operator should proceed to Chapter 7, "Module A: Response to Leaks or Spills," before formulating a response to the release.

Chapter 8

Module A: Response to Leaks or Spills

Has the response to a leak or spill been appropriate?

After a leak or spill from a HW tank system has been confirmed, steps must be taken immediately to:

- Prevent the release of more waste to the environment;
- Inspect, repair, or replace the tank;
- Remediate affected soil, groundwater, and/or surface water as necessary; and
- Notify the appropriate authorities of the release.

Module B: Release Reporting

Have all proper authorities been notified of the release of HW from a tank system?

The owner or operator must determine the amount of HW released and:

- If ≥ one pound of HW is released, notify the NRC, the appropriate Regional Administrator of the EPA, etc. as necessary; or
- If the spill is less than one pound and immediately cleaned up, no notification is required.

Chapter 9

Module A: Accumulation Time Requirements

Is the HW generator accumulating HW on-site in compliance with 40 CFR 262.34?

The HW generator is in compliance if:

- HW is not accumulated on-site for more than 90 days without the approval of the Regional Administrator;
- The date upon which the accumulation period began and the words "Hazardous Waste" are clearly marked on the tank;
- The generator complies with the requirements of 40 CFR Part 265 Subpart J, except 40 CFR 265.197(c) (Closure and Post-closure Care) and 265.200 (Waste Analysis and Trial Tests);
- The waste analysis requirements of 40 CFR 268.7 are met; and
- The requirements of 40 CFR Part 265, Subpart AA (Air Emission Standards for Process Vents) and Subpart BB (Air Emission Standards for Equipment Leaks) are met.

Module B: Small Quantity Generator Requirements

Is the generator a small quantity generator?

Small quantity generators are those who:

- Accumulate more than 100 but less than 1,000 kilograms of HW in a calendar month;
- Store the HW on-site for less than 180 days (or 270 days if the generator must ship the HW greater than 200 miles); and
- Accumulate less than 6,000 kilograms of HW at any time.

Is the small quantity generator conditionally exempt?

Conditionally exempt small quantity generators are those who generate less than:

- 100 kilograms per month of hazardous waste;
- 1 kilogram per month of acutely hazardous waste; or
- 100 kilograms per month of any residue, soil, or debris resulting from the cleanup of a spill and contaminated with an acutely hazardous waste.

Chapter 10

Module A: HW Tank Closure Requirements

Does the HW tank system either have secondary containment or a variance from the secondary containment requirements?

- If yes, then the HW tank may plan to close as a HW tank.
- If no, then contingent plans for the closure and post-closure care of this tank in the same manner as a HW landfill must be developed.

Can all HW residues, contaminated containment system components, soils, structures, and equipment be removed or decontaminated?

- If yes, then the HW tank may close as a HW tank.
- If no, then the HW tank must close in the same manner as a HW landfill.

Module B: HW Tanks Closing in the Same Manner as HW Landfills

Is the closure and post-closure care of the HW tank in compliance with the HW landfill requirements?

Each tank closed in the same manner as a HW landfill must comply with all of the following:

- The tank must be covered with an adequate final cover;
- The closure certification must be submitted;
- All post-closure requirements (e.g., security measures, deed notation) must be met; and
- Adequate leak detection measures must be implemented.

Appendix C

References

Appendix C
References

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2. "Definition of Solid and Hazardous Wastes," U.S. Department of Energy, Office of Environmental Guidance (DOE/EH-0273), August 1992.

3. Federal Register, Volume 51, July 14, 1986.

4. "Technical Resource Document for the Storage and Treatment of Hazardous Wastes in Tank Systems," United States Environmental Protection Agency, December 1986.

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19. "Delay of Closure for RCRA Hazardous Waste Management Facilities," U.S. Department of Energy, Office of Environmental Guidance, (EH-231-021/0993), September 1993.

20. "RCRA and CERCLA Requirements Associated with the Sale or Transfer of DOE Property," U.S. Department of Energy, Office of Environmental Guidance, (EH-231-022/1193), November 1993.

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Appendix D

List of CFR Title 40 Citations

Appendix D
List of CFR Title 40 Citations

40 CFR 124

40 CFR 124	(Procedures for Decisionmaking)

40 CFR 260

40 CFR 260.10	(Definitions)

40 CFR 261

40 CFR 261	(Identification and listing of hazardous waste)
40 CFR 261	(Subpart D) (Lists of hazardous wastes)
40 CFR 261.2	(Definition of solid waste)
40 CFR 261.3	(Definition of hazardous waste)
40 CFR 261.5	(Special requirements for hazardous waste generated by conditionally exempt small quantity generators)
40 CFR 261.6	(Requirements for recyclable materials)
40 CFR 261.21	(Characteristic of ignitability)
40 CFR 261.22	(Characteristic of corrosivity)
40 CFR 261.23	(Characteristic of reactivity)

40 CFR 262

40 CFR 262.34	(Accumulation time)
40 CFR 262.53	(Notification of intent to export)
40 CFR 262.56	(Annual reports)
40 CFR 262.57	(Recordkeeping)

40 CFR 264/265

40 CFR 264	(Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities
40 CFR 265	(Interim status standards for owners and operators of hazardous waste treatment, storage, and disposal facilities)
40 CFR 264/265	Subpart F (Releases from solid waste management units)
40 CFR 264/265	Subpart G (Closure and post-closure)
40 CFR 264/265	Subpart AA (Air Emission Standards for Process Vents)
40 CFR 264/265	Subpart BB (Air Emission Standards for Equipment Leaks)
40 CFR 264/265	Subpart CC (Air Emission Standards for Tanks, Surface Impoundments, and Containers)
40 CFR 264/265.1	(Purpose, scope, and applicability)
40 CFR 264/265.13	(General waste analysis)
40 CFR 264/265.14	(Security)
40 CFR 264/265.15	(General inspection requirements)
40 CFR 265.16	(Personnel training)
40 CFR 264/265.17	(General requirements for ignitable, reactive, or incompatible wastes)
40 CFR 264/265.18	(Location standards)

40 CFR 264/265.112	(Closure plan: amendment of plan)
40 CFR 264/265.113	(Closure: time allowed for closure)
40 CFR 264/265.115	(Certification of closure)
40 CFR 264/265.116	(Survey plat)
40 CFR 264/265.117(c)	(Post-closure care and use of property)
40 CFR 264/265.118	(Post-closure plan: amendment of plan)
40 CFR 264/265.119	(Post-closure notices)
40 CFR 264/265.120	(Certification of completion of post-closure care)
40 CFR 264/265.143(i)	(Financial assurance for closure)
40 CFR 264/265.145(i)	(Financial assurance for post-closure care)
40 CFR 264/265.190	(Applicability)
40 CFR 264/265.191	(Assessment of existing tank system's integrity)
40 CFR 264/265.192	(Design and installation of new tank systems or components)
40 CFR 264/265.193	(Containment and detection of releases)
40 CFR 264/265.194	(General operating requirements)
40 CFR 264/265.195	(Inspections)
40 CFR 264/265.196	(Response to leaks or spills and disposition of leaking or unfit-for-use tank systems)
40 CFR 264/265.197	(Closure and post-closure care)
40 CFR 264/265.198	(Special requirements for ignitable or reactive wastes)
40 CFR 264/265.199	(Special requirements for incompatible wastes)
40 CFR 264.301(c)(3)	(Design requirements)
40 CFR 264/265.302	(General operating requirements)
40 CFR 264/265.309	(Surveying and recordkeeping)
40 CFR 264/265.310	(Closure and post-closure care)

40 CFR 265

40 CFR 265	(Interim status standards for owners and operators of hazardous waste treatment, storage, and disposal facilities)
40 CFR 265.73	(Operating record)
40 CFR 265.111	(Closure performance standard)
40 CFR 265.194	(General operating requirements)
40 CFR 265.197	(Closure and post-closure care)
40 CFR 265.200	(Waste analysis and trial tests)
40 CFR 265.201	(Special requirements for generators of between 100 and 1,000 kg/mo that accumulate hazardous waste in tanks)

40 CFR 266

40 CFR 266	(Standards for the management of specific hazardous wastes and specific types of hazardous waste management facilities)

40 CFR 268

40 CFR 268.7(a)(4)	(Waste analysis)

40 CFR 270

40 CFR 270.11(d)	(Signatories to Permit Applications and Reports)
40 CFR 270.14	(Contents of Part B: General requirements)

40 CFR 270.16	(Specific Part B information requirements for tank systems)
40 CFR 270.27	(Specific Part B information requirements for air emission controls for tanks, surface impoundments, and containers)
40 CFR 270.32	(Establishing permit conditions)

40 CFR 271

40 CFR 271	(Requirements for authorization of state hazardous waste programs)
40 CFR 271.1	(Purpose and scope)

40 CFR 302

40 CFR 302	(Designation, reportable quantities, and notification)
40 CFR 302.4	(Designation of hazardous substances)

Appendix E

40 CFR 264.1083/265.1084

Waste Determination Procedures

§ 264.1083 Waste determination procedures.

(a) Waste determination procedure to determine average volatile organic (VO) concentration of a hazardous waste at the point of waste origination.

(1) An owner or operator shall determine the average VO concentration at the point of waste origination for each hazardous waste placed in a waste management unit exempted under the provisions of § 264.1082(c)(1) of this subpart from using air emission controls in accordance with standards specified in § 264.1084 through § 264.1087 of this subpart, as applicable to the waste management unit.

(i) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the hazardous waste stream is placed in a waste management unit exempted under the provisions of § 264.1082(c)(1) of this subpart from using air emission controls, and thereafter an initial determination of the average VO concentration of the waste stream shall be made for each averaging period that a hazardous waste is managed in the unit; and

(ii) Perform a new waste determination whenever changes to the source generating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level that is equal to or greater than the applicable VO concentration limits specified in § 264.1082 of this subpart.

(2) For a waste determination that is required by paragraph (a)(1) of this section, the average VO concentration of a hazardous waste at the point of waste origination shall be determined in accordance with the procedures specified in 40 CFR 265.1084(a)(2) through (a)(4).

(b) Waste determination procedures for treated hazardous waste.

(1) An owner or operator shall perform the applicable waste determinations for each treated hazardous waste placed in waste management units exempted under the provisions of § 264.1082(c)(2)(i) through (c)(2)(vi) of this subpart from using air emission controls in accordance with standards specified in §§ 264.1084 through 264.1087 of this subpart, as applicable to the waste management unit.

(i) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the treated waste stream is placed in the exempt waste management unit, and thereafter update the information used for the waste determination at least once every 12 months following the date of the initial waste determination; and

(ii) Perform a new waste determination whenever changes to the process generating or treating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level such that the applicable treatment conditions specified in § 264.1082 (c)(2) of this subpart are not achieved.

(2) The waste determination for a treated hazardous waste shall be performed in accordance with the procedures specified in 40 CFR 265.1084 (b)(2) through (b)(9), as applicable to the treated hazardous waste.

(c) Procedure to determine the maximum organic vapor pressure of a hazardous waste in a tank.

(1) An owner or operator shall determine the maximum organic vapor pressure for each hazardous waste placed in a tank using Tank Level 1 controls in accordance with standards specified in § 264.1084(c) of this subpart.

(2) The maximum organic vapor pressure of the hazardous waste may be determined in accordance with the procedures specified in 40 CFR 265.1084 (c)(2) through (c)(4).

(d) The procedure for determining no detectable organic emissions for the purpose of complying with this subpart shall be conducted in accordance with the procedures specified in 40 CFR 265.1084(d).

[61 FR 59954, Nov. 25, 1996, as amended at 62 FR 64658, Dec. 8, 1997; 64 FR 3389, Jan. 21, 1999] container, then the Regional Administrator may choose an appropriate method.

(3) In a case when the owner or operator is requested to perform the waste determination, the Regional Administrator may elect to have an authorized representative observe the collection of the hazardous waste samples used for the analysis.

(4) In a case when the results of the waste determination performed or requested by the Regional Administrator do not agree with the results of a waste determination performed by the owner or operator using knowledge of the waste, then the results of the waste determination performed in accordance with the requirements of paragraph (d)(1) of this section shall be used to establish compliance with the requirements of this subpart.

(5) In a case when the owner or operator has used an averaging period greater than 1 hour for determining the average VO concentration of a hazardous waste at the point of waste origination, the Regional Administrator may elect to establish compliance with this subpart by performing or requesting that the owner or operator perform a waste determination using direct measurement based on waste samples collected within a 1-hour period as follows:

(i) The average VO concentration of the hazardous waste at the point of waste origination shall be determined by direct measurement in accordance with the requirements of § 265.1084(a) of this subpart.

(ii) Results of the waste determination performed or requested by the Regional Administrator showing that the average VO concentration of the hazardous waste at the point of waste origination is equal to or greater than 500 ppmw shall constitute noncompliance with this subpart except in a case as provided for in paragraph (d)(5)(iii) of this section.

(iii) For the case when the average VO concentration of the hazardous waste at the point of waste origination previously has been determined by the owner or operator using an averaging period greater than 1 hour to be less than 500 ppmw but because of normal operating process variations the VO concentration of the hazardous waste determined by direct measurement for any given 1-hour period may be equal to or greater than 500 ppmw, information that was used by the owner or operator to determine the average VO concentration of the hazardous waste (e.g., test results, measurements, calculations, and other documentation) and recorded in the facility records in accordance with the requirements of § 265.1084(a) and § 265.1090 of this subpart shall be considered by the Regional Administrator together with the results of the waste determination performed or requested by the Regional Administrator in establishing compliance with this subpart.

[61 FR 59972, Nov. 25, 1996, as amended at 62 FR 64663, Dec. 8, 1997]

§ 265.1084 Waste determination procedures.

(a) Waste determination procedure to determine average volatile organic (VO) concentration of a hazardous waste at the point of waste origination.

(1) An owner or operator shall determine the average VO concentration at the point of waste origination for each hazardous waste placed in a waste management unit exempted under the provisions of § 265.1083(c)(1) of this subpart from using air emission controls in accordance with standards specified in § 265.1085 through § 265.1088 of this subpart, as applicable to the waste management unit.

(i) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the hazardous waste stream is placed in a waste management unit exempted under the provisions of § 265.1083(c)(1) of this subpart from using air emission controls, and thereafter an initial determination of the average VO concentration of the waste stream shall be made for each averaging period that a hazardous waste is managed in the unit; and

(ii) Perform a new waste determination whenever changes to the source generating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level that is equal to or greater than the VO concentration limit specified in § 265.1083(c)(1) of this subpart.

(2) For a waste determination that is required by paragraph (a)(1) of this section, the average VO concentration of a hazardous waste at the point of waste origination shall be determined using either direct measurement as specified in paragraph (a)(3) of this section or by knowledge as specified in paragraph (a)(4) of this section.

(3) Direct measurement to determine average VO concentration of a hazardous waste at the point of waste origination.

(i) Identification. The owner or operator shall identify and record the point of waste origination for the hazardous waste.

(ii) Sampling. Samples of the hazardous waste stream shall be collected at the point of waste origination in a manner such that volatilization of organics contained in the waste and in the subsequent sample is minimized and an adequately representative sample is collected and maintained for analysis by the selected method.

(A) The averaging period to be used for determining the average VO concentration for the hazardous waste stream on a mass-weighted average basis shall be designated and recorded. The averaging period can represent any time interval that the owner or operator determines is appropriate for the hazardous waste stream but shall not exceed 1 year.

(B) A sufficient number of samples, but no less than four samples, shall be collected and analyzed for a hazardous waste determination. All of the samples for a given waste determination shall be collected within a one-hour period. The average of the four or more sample results constitutes a waste determination for the waste stream. One or more waste determinations may be required to represent the complete range of waste compositions and quantities that occur during the entire averaging period due to normal variations in the operating conditions for the source or process generating the hazardous waste stream. Examples of such normal variations are seasonal variations in waste quantity or fluctuations in ambient temperature.

(C) All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste stream are collected such that a minimum loss of organics occurs throughout the sample collection and handling process, and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on-site in the facility operating records. An example of an acceptable sampling plan includes a plan incorporating sample collection and handling procedures in accordance with the requirements specified in ‘‘Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,’’ EPA Publication SW–846, (incorporated by reference—refer to § 260.11(a) of this chapter), or in Method 25D in 40 CFR part 60, appendix A.

(D) Sufficient information, as specified in the ‘‘site sampling plan’’ required under paragraph (a)(3)(ii)(C) of this section, shall be prepared and recorded to document the waste quantity represented by the samples and, as applicable, the operating conditions for the source or process generating the hazardous waste represented by the samples.

(iii) Analysis. Each collected sample shall be prepared and analyzed in accordance with one or more of the methods listed in paragraphs (a)(3)(iii)(A) through (a)(3)(iii)(I) of this section, including appropriate quality assurance and quality control (QA/QC) checks and use of target compounds for calibration. If Method 25D in 40 CFR part 60, appendix A is not used, then one or more methods should be chosen that are appropriate to ensure that the waste determination accounts for and reflects all organic compounds in the waste with Henry’s law constant values at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) [which can also be expressed as 1.8×10^{-6} atmospheres/gram-mole/m^3] at 25 degrees Celsius. Each of the analytical methods listed in paragraphs (a)(3)(iii)(B) through (a)(3)(iii)(G) of this section has an associated list of approved chemical compounds, for which EPA considers the method appropriate for measurement. If an owner or operator uses EPA Method 624, 625, 1624, or 1625 in 40 CFR part 136, appendix A to analyze one or more compounds that are not on that method's published list, the Alternative Test Procedure contained in 40 CFR 136.4 and 136.5 must be followed. If an owner or operator uses EPA Method 8260 or 8270 in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication SW–846, (incorporated by reference—refer to §260.11(a) of this chapter) to analyze one or more compounds that are not on that method's published list, the procedures in paragraph (a)(3)(iii)(H) of this section must be followed. At the owner or operator's discretion, the owner or operator may adjust test data measured by a method other than Method 25D to the corresponding average VO concentration value which would have been obtained had the waste samples been analyzed using Method 25D in 40 CFR part 60, appendix A. To adjust these data, the measured concentration of each individual chemical constituent contained in the waste is multiplied by the appropriate constituent-specific adjustment factor (f_{m25D}). If the owner or operator elects to adjust test data, the adjustment must be made to all individual chemical constituents with a Henry's law constant value greater than or equal to 0.1 Y/X at 25 degrees Celsius contained in the waste. Constituent-specific adjustment factors (f_{m25D}) can be obtained by contacting the Waste and Chemical Processes Group, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711.

(A) Method 25D in 40 CFR part 60, appendix A.

(B) Method 624 in 40 CFR part 136, appendix A.

(C) Method 625 in 40 CFR part 136, appendix A. Perform corrections to the compounds for which the analysis is being conducted based on the ''accuracy as recovery'' using the factors in Table 7 of the method.

(D) Method 1624 in 40 CFR part 136, appendix A.

(E) Method 1625 in 40 CFR part 136, appendix A.

(F) Method 8260 in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication SW–846 (incorporated by reference—refer to §260.11(a) of this chapter). Maintain a formal quality assurance program consistent with the requirements of Method 8260. The quality assurance program shall include the following elements:

(*1*) Documentation of site-specific procedures to minimize the loss of compounds due to volatilization, biodegradation, reaction, or sorption during the sample collection, storage, preparation, introduction, and analysis steps.

(*2*) Measurement of the overall accuracy and precision of the specific procedures.

(G) Method 8270 in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication SW–846 (incorporated by reference—refer to §260.11(a) of this chapter). Maintain a formal quality assurance program consistent with the requirements of Method 8270. The quality assurance program shall include the following elements:

(*1*) Documentation of site-specific procedures to minimize the loss of compounds due to volatilization, biodegradation, reaction, or sorption during the sample collection, storage, preparation, introduction, and analysis steps.

(*2*) Measurement of the overall accuracy and precision of the specific procedures.

(H) Any other EPA standard method that has been validated in accordance with ''Alternative Validation Procedure for EPA Waste and Wastewater Methods'', 40 CFR part 63, appendix D. As an alternative, other EPA standard methods may be validated by the procedure specified in paragraph (a)(3)(iii)(I) of this section.

(I) Any other analysis method that has been validated in accordance with the procedures specified in Section 5.1 or Section 5.3, and the corresponding calculations in Section 6.1 or Section 6.3, of Method 301 in 40 CFR part 63, appendix A. The data are acceptable if they meet the criteria specified in Section 6.1.5 or Section 6.3.3 of Method 301. If correction is required under section 6.3.3 of Method 301, the data are acceptable if the correction factor is within the range 0.7 to 1.30. Other sections of Method 301 are not required.

(iv) Calculations.

(A) The average VO concentration (C) on a mass-weighted basis shall be calculated by using the results for all waste determinations conducted in accordance with paragraphs (a)(3) (ii) and (iii) of this section and the following equation:

$$\overline{C} = \frac{1}{Q_T} \times \sum_{i=1}^{\eta} \left(Q_i \times C_i \right)$$

where:

C = Average VO concentration of the hazardous waste at the point of waste origination on a mass-weighted basis, ppmw.

i = Individual waste determination ‘‘i’’ of the hazardous waste.

n = Total number of waste determinations of the hazardous waste conducted for the averaging period (not to exceed 1 year).

Q_i = Mass quantity of hazardous waste stream represented by C_i, kg/hr.

Q_T = Total mass quantity of hazardous waste during the averaging period, kg/hr.

C_i = Measured VO concentration of waste determination ‘‘i’’ as determined in accordance with the requirements of paragraph (a)(3)(iii) of this section (i.e. the average of the four or more samples specified in paragraph (a)(3)(ii)(B) of this section), ppmw.

(B) For the purpose of determining C_i, for individual waste samples analyzed in accordance with paragraph (a)(3)(iii) of this section, the owner or operator shall account for VO concentrations determined to be below the limit of detection of the analytical method by using the following VO concentration:

(*1*) If Method 25D in 40 CFR part 60, Appendix A is used for the analysis, one-half the blank value determined in the method at section 4.4 of Method 25D in 40 CFR part 60, appendix A.

(*2*) If any other analytical method is used, one-half the sum of the limits of detection established for each organic constituent in the waste that has a Henry’s law constant values at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) [which can also be expressed as 1.8 x 10^{-6} atmospheres/gram-mole/m^3] at 25 degrees Celsius.

(v) Provided that the test method is appropriate for the waste as required under paragraph (a)(3)(iii) of this section, the EPA will determine compliance based on the test method used by the owner or operator as recorded pursuant to § 265.1090(f)(1) of this subpart.

(4) Use of owner or operator knowledge to determine average VO concentration of a hazardous waste at the point of waste origination.

(i) Documentation shall be prepared that presents the information used as the basis for the owner’s or operator’s knowledge of the hazardous waste stream’s average VO concentration. Examples of information that may be used as the basis for knowledge include: Material balances for the source or process generating the hazardous waste stream; constituent-specific chemical test data for the hazardous waste stream from previous testing that are still applicable to the current waste stream; previous test data for other locations managing the same type of waste stream; or other knowledge based on information included in manifests, shipping papers, or waste certification notices.

(ii) If test data are used as the basis for knowledge, then the owner or operator shall document the test method, sampling protocol, and the means by which sampling variability and analytical variability are accounted for in the determination of the average VO concentration. For example, an owner or operator may use organic concentration test data for the hazardous waste stream that are validated in accordance with Method 301 in 40 CFR part 63, appendix A as the basis for knowledge of the waste.

(iii) An owner or operator using chemical constituent-specific concentration test data as the basis for knowledge of the hazardous waste may adjust the test data to the corresponding average VO concentration value which would have been obtained had the waste samples been analyzed using Method 25D in 40 CFR part 60, appendix A. To adjust these data, the measured concentration for each individual chemical constituent contained in the waste is multiplied by the appropriate constituent-specific adjustment factor (f_{m25D}).

(iv) In the event that the Regional Administrator and the owner or operator disagree on a determination of the average VO concentration for a hazardous waste stream using knowledge, then the results from a determination of average VO concentration using direct measurement as specified in paragraph (a)(3) of this section shall be used to establish compliance with the applicable requirements of this subpart. The Regional Administrator may perform or request that the owner or operator perform this determination using direct measurement. The owner or operator may choose one or more appropriate methods to analyze each collected sample in accordance with the requirements of paragraph (a)(3)(iii) of this section.

(b) Waste determination procedures for treated hazardous waste.

(1) An owner or operator shall perform the applicable waste determination for each treated hazardous waste placed in a waste management unit exempted under the provisions of § 265.1083 (c)(2)(i) through (c)(2)(vi) of this subpart from using air emission controls in accordance with standards specified in §§ 265.1085 through 265.1088 of this subpart, as applicable to the waste management unit.

(i) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the treated waste stream is placed in a waste management unit exempted under the provisions of § 265.1083(c)(2), § 265.1083(c)(3), or § 265.1083(c)(4) of this subpart from using air emission controls, and thereafter update the information used for the waste determination at least once every 12 months following the date of the initial waste determination; and

(ii) Perform a new waste determination whenever changes to the process generating or treating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level such that the applicable treatment conditions specified in § 265.1083(c)(2), § 265.1083(c)(3), or § 265.1083(c)(4) of this subpart are not achieved.

(2) The owner or operator shall designate and record the specific provision in § 265.1083(c)(2) of this subpart under which the waste determination is being performed. The waste determination for the treated hazardous waste shall be performed using the applicable procedures specified in paragraphs (b)(3) through (b)(9) of this section.

(3) Procedure to determine the average VO concentration of a hazardous waste at the point of waste treatment.

(i) Identification. The owner or operator shall identify and record the point of waste treatment for the hazardous waste.

(ii) Sampling. Samples of the hazardous waste stream shall be collected at the point of waste treatment in a manner such that volatilization of organics contained in the waste and in the subsequent sample is minimized and an adequately representative sample is collected and maintained for analysis by the selected method.

(A) The averaging period to be used for determining the average VO concentration for the hazardous waste stream on a mass-weighted average basis shall be designated and recorded. The averaging period can represent any time interval that the owner or operator determines is appropriate for the hazardous waste stream but shall not exceed 1 year.

(B) A sufficient number of samples, but no less than four samples, shall be collected and analyzed for a hazardous waste determination. All of the samples for a given waste determination shall be collected within a one-hour period. The average of the four or more sample results constitutes a waste determination for the waste stream. One or more waste determinations may be required to represent the complete range of waste compositions and quantities that occur during the entire averaging period due to normal variations in the operating conditions for the process generating or treating the hazardous waste stream. Examples of such normal variations are seasonal variations in waste quantity or fluctuations in ambient temperature.

(C) All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste stream are collected such that a minimum loss of organics occurs throughout the sample collection and handling process, and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on-site in the facility operating records. An example of an acceptable sampling plan includes a plan incorporating sample collection and handling procedures in accordance with the requirements specified in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication No. SW–846 (incorporated by reference—refer to § 260.11(a) of this chapter), or in Method 25D in 40 CFR part 60, appendix A.

(D) Sufficient information, as specified in the ''site sampling plan'' required under paragraph (C) of (b)(3)(ii)this section, § 265.1084(b)(3)(ii), shall be prepared and recorded to document the waste quantity represented by the samples and, as applicable, the operating conditions for the process treating the hazardous waste represented by the samples.

(iii) Analysis. Each collected sample shall be prepared and analyzed in accordance with one or more of the methods listed in paragraphs (b)(3)(iii)(A) through (b)(3)(iii)(I) of this section, including appropriate quality assurance and quality control (QA/QC) checks and use of target compounds for calibration. When the owner or operator is making a waste determination for a treated hazardous waste that is to be compared to an average VO concentration at the point of waste origination or the point of waste entry to the treatment system to determine if the conditions of § 264.1082(c)(2)(i) through (c)(2)(vi) or § 265.1083(c)(2)(i) through (c)(2)(vi) are met, then the waste samples shall be prepared and analyzed using the same method or methods as were used in making the initial waste determinations at the point of waste origination or at the point of entry to the treatment system. If Method 25D in 40 CFR part 60, appendix A is not used, then one or more methods should be chosen that are appropriate to ensure that the waste determination accounts for and reflects all organic compounds in the waste with Henry's law constant values at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) [which can also be expressed as 1.8 x 10^{-6} atmospheres/gram-mole/m3] at 25 degrees Celsius. Each of the analytical methods listed in paragraphs (b)(3)(iii)(B) through (b)(3)(iii)(G) of this section has an associated list of approved chemical compounds, for which EPA considers the method appropriate for measurement. If an owner or operator uses EPA Method 624, 625, 1624, or 1625 in 40 CFR part 136, appendix A to analyze one or more compounds that are not on that method's published list, the Alternative Test Procedure contained in 40 CFR 136.4 and 136.5 must be followed. If an owner or operator uses EPA Method 8260 or 8270 in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication SW–846, (incorporated by reference—refer to § 260.11(a) of this chapter) to analyze one or more compounds that are not on that method's published list, the procedures in paragraph (b)(3)(iii)(H) of this section must be followed. At the owner or operator's discretion, the owner or operator may adjust test data measured by a method other than Method 25D to the corresponding average VO concentration value which would have been obtained had the waste samples been analyzed using Method 25D in 40 CFR part 60, appendix A. To adjust these data, the measured concentration of each individual chemical constituent contained in the waste is multiplied by the appropriate constituent-specific adjustment factor (f_{m25D}). If the owner or operator elects to adjust test data, the adjustment must be made to all individual chemical constituents with a Henry's law constant equal to or greater than 0.1 Y/X at 25 degrees Celsius contained in the waste. Constituent-specific adjustment factors (f_{m25D}) can be obtained by contacting the Waste and Chemical Processes Group, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711.

(A) Method 25D in 40 CFR part 60, appendix A.

(B) Method 624 in 40 CFR part 136, appendix A.

(C) Method 625 in 40 CFR part 136, appendix A. Perform corrections to the compounds for which the analysis is being conducted based on the ''accuracy as recovery'' using the factors in Table 7 of the method.

(D) Method 1624 in 40 CFR part 136, appendix A.

(E) Method 1625 in 40 CFR part 136, appendix A.

(F) Method 8260 in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication SW–846 (incorporated by reference—refer to § 260.11(a) of this chapter). Maintain a formal quality assurance program consistent with the requirements of Method 8260. The quality assurance program shall include the following elements:

(*1*) Documentation of site-specific procedures to minimize the loss of compounds due to volatilization, biodegradation, reaction, or sorption during the sample collection, storage, preparation, introduction, and analysis steps.

(*2*) Measurement of the overall accuracy and precision of the specific procedures.

(G) Method 8270 in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication SW–846 (incorporated by reference—refer to § 260.11(a) of this chapter). Maintain a formal quality assurance program consistent with the requirements of Method 8270. The quality assurance program shall include the following elements:

(*1*) Documentation of site-specific procedures to minimize the loss of compounds due to volatilization, biodegradation, reaction, or sorption during the sample collection, storage, preparation, introduction, and analysis steps.

(*2*) Measurement of the overall accuracy and precision of the specific procedures.

(H) Any other EPA standard method that has been validated in accordance with ''Alternative Validation Procedure for EPA Waste and Wastewater Methods'', 40 CFR part 63, appendix D. As an alternative, other EPA standard methods may be validated by the procedure specified in paragraph (b)(3)(iii)(I) of this section.

(I) Any other analysis method that has been validated in accordance with the procedures specified in Section 5.1 or Section 5.3, and the corresponding calculations in Section 6.1 or Section 6.3, of Method 301 in 40 CFR part 63, appendix A. The data are acceptable if they meet the criteria specified in Section 6.1.5 or Section 6.3.3 of Method 301. If correction is required under section 6.3.3 of Method 301, the data are acceptable if the correction factor is within the range 0.7 to 1.30. Other sections of Method 301 are not required.

(iv) *Calculations.* The average VO concentration (C) on a mass-weighted basis shall be calculated by using the results for all waste determinations conducted in accordance with paragraphs (b)(3)(ii) and (iii) of this section and the following equation:

$$\overline{C} = \frac{1}{Q_T} \times \sum_{i=1}^{n} \left(Q_i \times C_i \right)$$

where:

C=Average VO concentration of the hazardous waste at the point of waste treatment on a mass-weighted basis, ppmw.

i=Individual waste determination ''i'' of the hazardous waste.

n=Total number of waste determinations of the hazardous waste conducted for the averaging period (not to exceed 1 year).

Q_i=Mass quantity of hazardous waste stream represented by C_i, kg/hr.

Q_T=Total mass quantity of hazardous waste during the averaging period, kg/hr.

C_i=Measured VO concentration of waste determination ''i'' as determined in accordance with the requirements of paragraph (b)(3)(iii) of this section (i.e. the average of the four or more samples specified in paragraph (b)(3)(ii)(B) of this section), ppmw.

(v) Provided that the test method is appropriate for the waste as required under paragraph (b)(3)(iii) of this section, compliance shall be determined based on the test method used by the owner or operator as recorded pursuant to § 265.1090(f)(1) of this subpart.

(4) Procedure to determine the exit concentration limit (C_t) for a treated hazardous waste.

(i) The point of waste origination for each hazardous waste treated by the process at the same time shall be identified.

(ii) If a single hazardous waste stream is identified in paragraph (b)(4)(i) of this section, then the exit concentration limit (C_t) shall be 500 ppmw.

(iii) If more than one hazardous waste stream is identified in paragraph (b)(4)(i) of this section, then the average VO concentration of each hazardous waste stream at the point of waste origination shall be determined in accordance with the requirements of paragraph (a) of this section. The exit concentration limit (C_t) shall be calculated by using the results determined for each individual hazardous waste stream and the following equation:

$$C_t = \frac{\sum_{x=1}^{m}\left(Q_x \times \overline{C_x}\right) + \sum_{y=1}^{n}\left(Q_y \times 500 \text{ ppmw}\right)}{\sum_{x=1}^{m} Q_x + \sum_{y=1}^{n} Q_y}$$

Where:

C_t = Exit concentration limit for treated hazardous waste, ppmw.

x = Individual hazardous waste stream ''x'' that has an average VO concentration less than 500 ppmw at the point of waste origination as determined in accordance with the requirements of § 265.1084(a) of this subpart.

y = Individual hazardous waste stream ''y'' that has an average VO concentration equal to or greater than 500 ppmw at the point of waste origination as determined in accordance with the requirements of § 265.1084(a) of this subpart.

m = Total number of ''x'' hazardous waste streams treated by process.

n = Total number of ''y'' hazardous waste streams treated by process.

Q_x = Annual mass quantity of hazardous waste stream ''x,'' kg/yr.

Q_y = Annual mass quantity of hazardous waste stream ''y,'' kg/yr.

$\overline{C_x}$ = Average VO concentration of hazardous waste stream ''x'' at the point of waste origination as determined in accordance with the requirements of § 265.1084(a) of this subpart, ppmw.

(5) Procedure to determine the organic reduction efficiency (R) for a treated hazardous waste.

(i) The organic reduction efficiency (R) for a treatment process shall be determined based on results for a minimum of three consecutive runs.

(ii) All hazardous waste streams entering the treatment process and all hazardous waste streams exiting the treatment process shall be identified. The owner or operator shall prepare a sampling plan for measuring these streams that accurately reflects the retention time of the hazardous waste in the process.

(iii) For each run, information shall be determined for each hazardous waste stream identified in paragraph (b)(5)(ii) of this section using the following procedures:

(A) The mass quantity of each hazardous waste stream entering the process (Q_b) and the mass quantity of each hazardous waste stream exiting the process (Q_a) shall be determined.

(B) The average VO concentration at the point of waste origination of each hazardous waste stream entering the process (C_b) during the run shall be determined in accordance with the requirements of paragraph (a)(3) of this section. The average VO concentration at the point of waste treatment of each waste stream exiting the process (C_a) during the run shall be determined in accordance with the requirements of paragraph (b)(3) of this section.

(iv) The waste volatile organic mass flow entering the process (E_b) and the waste volatile organic mass flow exiting the process (E_a) shall be calculated by using the results determined in accordance with paragraph (b)(5)(iii) of this section and the following equations:

$$E_b = \frac{1}{10^6}\sum_{j=1}^{m}\left(Q_{bj} \times \overline{C_{bj}}\right)$$

$$E_a = \frac{1}{10^6}\sum_{j=1}^{m}\left(Q_{aj} \times \overline{C_{aj}}\right)$$

Where:

E_a = Waste volatile organic mass flow exiting process, kg/hr.

E_b = Waste volatile organic mass flow entering process, kg/hr.

m = Total number of runs (at least 3)

j = Individual run ''j''

Q_b = Mass quantity of hazardous waste entering process during run ''j,'' kg/hr.

Q_a = Average mass quantity of hazardous waste exiting process during run ''j,'' kg/hr.

$\overline{C_a}$ = Average VO concentration of hazardous waste exiting process during run "j" as determined in accordance with the requirements of § 265.1084(b)(3) of this subpart, ppmw.

$\overline{C_b}$ = Average VO concentration of hazardous waste entering process during run "j" as determined in accordance with the requirements of § 265.1084(a)(3) of this subpart, ppmw.

(v) The organic reduction efficiency of the process shall be calculated by using the results determined in accordance with paragraph (b)(5)(iv) of this section and the following equation:

$$R = \frac{E_b - E_a}{E_b} \times 100\%$$

Where:

R = Organic reduction efficiency, percent.

E_b = Waste volatile organic mass flow entering process as determined in accordance with the requirements of paragraph (b)(5)(iv) of this section, kg/hr.

E_a = Waste volatile organic mass flow exiting process as determined in accordance with the requirements of paragraph (b)(5)(iv) of this section, kg/hr.

(6) Procedure to determine the organic biodegradation efficiency (R_{bio}) for a treated hazardous waste.

(i) The fraction of organics biodegraded (F_{bio}) shall be determined using the procedure specified in 40 CFR part 63, appendix C of this chapter.

(ii) The R_{bio} shall be calculated by using the following equation:

$$R_{bio} = F_{bio} \times 100\%$$

Where:

R_{bio} = Organic biodegradation efficiency, percent.

F_{bio} = Fraction of organic biodegraded as determined in accordance with the requirements of paragraph (b)(6)(i) of this section.

(7) Procedure to determine the required organic mass removal rate (RMR) for a treated hazardous waste.

(i) All of the hazardous waste streams entering the treatment process shall be identified.

(ii) The average VO concentration of each hazardous waste stream at the point of waste origination shall be determined in accordance with the requirements of paragraph (a) of this section.

(iii) For each individual hazardous waste stream that has an average VO concentration equal to or greater than 500 ppmw at the point of waste origination, the average volumetric flow rate and the density of the hazardous waste stream at the point of waste origination shall be determined.

(iv) The RMR shall be calculated by using the average VO concentration, average volumetric flow rate, and density determined for each individual hazardous waste stream, and the following equation:

$$RMR = \sum_{y=1}^{n} \left[V_y \times k_y \times \frac{\left(\overline{C_y} - 500 \text{ ppmw}\right)}{10^6} \right]$$

Where:

RMR = Required organic mass removal rate, kg/hr.

y = Individual hazardous waste stream "y" that has an average VO concentration equal to or greater than 500 ppmw at the point of waste origination as determined in accordance with the requirements of § 265.1084(a) of this subpart.

n = Total number of "y" hazardous waste streams treated by process.

V_y = Average volumetric flow rate of hazardous waste stream "y" at the point of waste origination, m^3/hr.

k_y = Density of hazardous waste stream "y," kg/m^3

$\overline{C_y}$ = Average VO concentration of hazardous waste stream "y" at the point of waste origination as determined in accordance with the requirements of § 265.1084(a) of this subpart, ppmw.

(8) Procedure to determine the actual organic mass removal rate (MR) for a treated hazardous waste.

(i) The MR shall be determined based on results for a minimum of three consecutive runs. The sampling time for each run shall be 1 hour.

(ii) The waste volatile organic mass flow entering the process (E_b) and the waste volatile organic mass flow exiting the process (E_a) shall be determined in accordance with the requirements of paragraph (b)(5)(iv) of this section.

(iii) The MR shall be calculated by using the mass flow rate determined in accordance with the requirements of paragraph (b)(8)(ii) of this section and the following equation:

$$MR = E_b - E_a$$

Where:

MR=Actual organic mass removal rate, kg/hr.

E_b=Waste volatile organic mass flow entering process as determined in accordance with the requirements of paragraph (b)(5)(iv) of this section, kg/hr.

E_a=Waste volatile organic mass flow exiting process as determined in accordance with the requirements of paragraph (b)(5)(iv) of this section, kg/hr.

(9) Procedure to determine the actual organic mass biodegradation rate (MR_{bio}) for a treated hazardous waste.

(i) The MR_{bio} shall be determined based on results for a minimum of three consecutive runs. The sampling time for each run shall be 1 hour.

(ii) The waste organic mass flow entering the process (E_b) shall be determined in accordance with the requirements of paragraph (b)(5)(iv) of this section.

(iii) The fraction of organic biodegraded (F_{bio}) shall be determined using the procedure specified in 40 CFR part 63, appendix C of this chapter.

(iv) The MR_{bio} shall be calculated by using the mass flow rates and fraction of organic biodegraded determined in accordance with the requirements of paragraphs (b)(9)(ii) and (b)(9)(iii) of this section, respectively, and the following equation:

$$MR_{bio} = E_b \times F_{bio}$$

Where:

MR_{bio}=Actual organic mass biodegradation rate, kg/hr.

E_b=Waste organic mass flow entering process as determined in accordance with the requirements of paragraph (b)(5)(iv) of this section, kg/hr.

F_{bio}=Fraction of organic biodegraded as determined in accordance with the requirements of paragraph (b)(9)(iii) of this section.

(c) Procedure to determine the maximum organic vapor pressure of a hazardous waste in a tank.

(1) An owner or operator shall determine the maximum organic vapor pressure for each hazardous waste placed in a tank using Tank Level 1 controls in accordance with the standards specified in § 265.1085(c) of this subpart.

(2) An owner or operator shall use either direct measurement as specified in paragraph (c)(3) of this section or knowledge of the waste as specified by paragraph (c)(4) of this section to determine the maximum organic vapor pressure which is representative of the hazardous waste composition stored or treated in the tank.

(3) Direct measurement to determine the maximum organic vapor pressure of a hazardous waste.

(i) Sampling. A sufficient number of samples shall be collected to be representative of the waste contained in the tank. All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste are collected such that a minimum loss of organics occurs throughout the sample collection and handling process and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on-site in the facility operating records. An example of an acceptable sampling plan includes a plan incorporating sample collection and handling procedures in accordance with the requirements specified in ''Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,'' EPA Publication No. SW–846, (incorporated by reference—refer to § 260.11(a) of this chapter), or in Method 25D in 40 CFR part 60, appendix A.

(ii) Analysis. Any appropriate one of the following methods may be used to analyze the samples and compute the maximum organic vapor pressure of the hazardous waste:

(A) Method 25E in 40 CFR part 60 appendix A;

(B) Methods described in American Petroleum Institute Publication 2517, Third Edition, February 1989, ''Evaporative Loss from External Floating-

Roof Tanks,'' (incorporated by reference—refer to § 260.11 of this chapter);

(C) Methods obtained from standard reference texts;

(D) ASTM Method 2879–92 (incorporated by reference—refer to § 260.11 of this chapter); and

(E) Any other method approved by the Regional Administrator.

(4) Use of knowledge to determine the maximum organic vapor pressure of the hazardous waste. Documentation shall be prepared and recorded that presents the information used as the basis for the owner's or operator's knowledge that the maximum organic vapor pressure of the hazardous waste is less than the maximum vapor pressure limit listed in § 265.1085(b)(1)(i) of this subpart for the applicable tank design capacity category. An example of information that may be used is documentation that the hazardous waste is generated by a process for which at other locations it previously has been determined by direct measurement that the waste maximum organic vapor pressure is less than the maximum vapor pressure limit for the appropriate tank design capacity category.

(d) Procedure for determining no detectable organic emissions for the purpose of complying with this subpart:

(1) The test shall be conducted in accordance with the procedures specified in Method 21 of 40 CFR part 60, appendix A. Each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices shall be checked. Potential leak interfaces that are associated with covers and closure devices include, but are not limited to: The interface of the cover and its foundation mounting; the periphery of any opening on the cover and its associated closure device; and the sealing seat interface on a spring-loaded pressure relief valve.

(2) The test shall be performed when the unit contains a hazardous waste having an organic concentration representative of the range of concentrations for the hazardous waste expected to be managed in the unit. During the test, the cover and closure devices shall be secured in the closed position.

(3) The detection instrument shall meet the performance criteria of Method 21 of 40 CFR part 60, appendix A, except the instrument response factor criteria in section 3.1.2(a) of Method 21 shall be for the average composition of the organic constituents in the hazardous waste placed in the waste management unit, not for each individual organic constituent.

(4) The detection instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21 of 40 CFR part 60, appendix A.

(5) Calibration gases shall be as follows:

(i) Zero air (less than 10 ppmv hydrocarbon in air), and

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppmv methane or n-hexane.

(6) The background level shall be determined according to the procedures in Method 21 of 40 CFR part 60, appendix A.

(7) Each potential leak interface shall be checked by traversing the instrument probe around the potential leak interface as close to the interface as possible, as described in Method 21 of 40 CFR part 60, appendix A. In the case when the configuration of the cover or closure device prevents a complete traverse of the interface, all accessible portions of the interface shall be sampled. In the case when the configuration of the closure device prevents any sampling at the interface and the device is equipped with an enclosed extension or horn (e.g., some pressure relief devices), the instrument probe inlet shall be placed at approximately the center of the exhaust area to the atmosphere.

(8) The arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of 500 ppmv except when monitoring a seal around a rotating shaft that passes through a cover opening, in which case the comparison shall be as specified in paragraph (d)(9) of this section. If the difference is less than 500 ppmv, then the potential leak interface is determined to operate with no detectable organic emissions.

(9) For the seals around a rotating shaft that passes through a cover opening, the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of 10,000 ppmw. If the difference is less than 10,000 ppmw, then the potential leak interface is determined to operate with no detectable organic emissions.

[61 FR 59974, Nov. 25, 1996, as amended at 62 FR 64664, Dec. 8, 1997; 64 FR 3390, January 21, 1999]

Appendix F

40 CFR 61.346

Standards: Individual Drain Systems

Appendix F
40 CFR Part 63, Subpart RR Standards:
National Emisison Standards for Individual Drain Systems

(a) Except as provided in paragraph (b) of this section, the owner or operator shall meet the following standards for each individual drain system in which waste is placed in accordance with 40 CFR 61.342(c)(1)(ii).

(1) The owner or operator shall install, operate, and maintain on each drain system opening a cover and closed-vent system that routes all organic vapors vented from the drain system to a control device.

(i) The cover shall meet the following requirements:

(A) The cover and all openings (e.g., access hatches, sampling ports) shall be designed to operate with no detectable emissions as indicated by an instrument reading of less than 500 ppmv above background, initially and thereafter at least once per year by the methods specified in 40 CFR 61.335(h).

(B) Each opening shall be maintained in a closed, sealed position (e.g., covered by a lid that is gasketed and latched) at all times that waste is in the drain system except when it is necessary to use the opening for waste sampling or removal, or for equipment inspection, maintenance, or repair.

(ii) The closed-vent system and control device shall be designed and operated in accordance with 40 CFR 61.349.

(2) Each cover seal, access hatch, and all other openings shall be checked by visual inspection initially and quarterly thereafter to ensure that no cracks or gaps occur and that access hatches and other openings are closed and gasketed properly.

(3) Except as provided in 40 CFR 61.350, when a broken seal or gasket or other problem is identified, or when detectable emissions are measured, first efforts at repair shall be made as soon as practicable, but not later than 15 calendar days after identification.

(b) As an alternative to complying with paragraph (a) of this section, an owner or operator may elect to comply with the following requirements:

(1) Each drain shall be equipped with water seal controls or a tightly sealed cap or plug.

(2) Each junction box shall be equipped with a cover and may have a vent pipe. The vent pipe shall be at least 90 cm (3 ft) in length and shall not exceed 10.2 cm (4 in) in diameter.

(i) Junction box covers shall have a tight seal around the edge and shall be kept in place at all times, except during inspection and maintenance.

(ii) One of the following methods shall be used to control emissions from the junction box vent pipe to the atmosphere:

(A) Equip the junction box with a system to prevent the flow of organic vapors from the junction box vent pipe to the atmosphere during normal operation. An example of such a system includes use of water seal controls on the junction box. A flow indicator shall be installed, operated, and maintained on each junction box vent pipe to ensure that organic vapors are not vented from the junction box to the atmosphere during normal operation.

(B) Connect the junction box vent pipe to a closed-vent system and control device in accordance with 40 CFR 61.349.

(3) Each sewer line shall not be open to the atmosphere and shall be covered or enclosed in a manner so as to have no visual gaps or cracks in joints, seals, or other emission interfaces.

Appendix G

40 CFR Part 264 Subpart AA

Air Emission Standards for Process Vents

Subpart AA—Air Emission Standards for Process Vents

SOURCE: 55 FR 25494, June 21, 1990, unless otherwise noted.

§264.1030 Applicability.

(a) The regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous wastes (except as provided in §264.1).

(b) Except for §264.1034, paragraphs (d) and (e), this subpart applies to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppmw, if these operations are conducted in one of the following:

(1) A unit that is subject to the permitting requirements of 40 CFR part 270, or

(2) A unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility otherwise subject to the permitting requirements of 40 CFR part 270, or

(3) A unit that is exempt from permitting under the provisions of 40 CFR

262.34(a) (i.e., a ''90-day'' tank or container) and is not a recycling unit under the provisions of 40 CFR 261.6.

(c) For the owner and operator of a facility subject to this subpart and who received a final permit under RCRA section 3005 prior to December 6, 1996, the requirements of this subpart shall be incorporated into the permit when the permit is reissued in accordance with the requirements of 40 CFR 124.15 or reviewed in accordance with the requirements of 40 CFR 270.50(d). Until such date when the owner and operator receives a final permit incorporating the requirements of this subpart, the owner and operator is subject to the requirements of 40 CFR 265, subpart AA.

[NOTE: The requirements of §§ 264.1032 through 264.1036 apply to process vents on hazardous waste recycling units previously exempt under § 261.6(c)(1). Other exemptions under §§ 261.4, and 264.1(g) are not affected by these requirements.]

(d) The requirements of this subpart do not apply to the pharmaceutical manufacturing facility, commonly referred to as the Stonewall Plant, located at Route 340 South, Elkton, Virginia, provided that facility is operated in compliance with the requirements contained in a Clean Air Act permit issued pursuant to 40 CFR 52.2454. The requirements of this subpart shall apply to the facility upon termination of the Clean Air Act permit issued pursuant to 40 CFR 52.2454.

(e) The requirements of this subpart do not apply to the process vents at a facility where the facility owner or operator certifies that all of the process vents that would otherwise be subject to this subpart are equipped with and operating air emission controls in accordance with the process vent requirements of an applicable Clean Air Act regulation codified under 40 CFR part 60, part 61, or part 63. The documentation of compliance under regulations at 40 CFR part 60, part 61, or part 63 shall be kept with, or made readily available with, the facility operating record.

[55 FR 25494, June 21, 1990, as amended at 56 FR 19290, Apr. 26, 1991; 61 FR 59950, Nov. 25, 1996; 62 FR 52641, Oct. 8, 1997; 62 FR 64656, Dec. 8, 1997]

§ 264.1031 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and parts 260–266.

Air stripping operation is a desorption operation employed to transfer one or more volatile components from a liquid mixture into a gas (air) either with or without the application of heat to the liquid. Packed towers, spray towers, and bubble-cap, sieve, or valve-type plate towers are among the process configurations used for contacting the air and a liquid.

Bottoms receiver means a container or tank used to receive and collect the heavier bottoms fractions of the distillation feed stream that remain in the liquid phase.

Closed-vent system means a system that is not open to the atmosphere and that is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.

Condenser means a heat-transfer device that reduces a thermodynamic fluid from its vapor phase to its liquid phase.

Connector means flanged, screwed, welded, or other joined fittings used to connect two pipelines or a pipeline and a piece of equipment. For the purposes of reporting and recordkeeping, connector means flanged fittings that are not covered by insulation or other materials that prevent location of the fittings.

Continuous recorder means a data-recording device recording an instantaneous data value at least once every 15 minutes.

Control device means an enclosed combustion device, vapor recovery system, or flare. Any device the primary function of which is the recovery or capture of solvents or other organics for use, reuse, or sale (e.g., a primary condenser on a solvent recovery unit) is not a control device.

Control device shutdown means the cessation of operation of a control device for any purpose.

Distillate receiver means a container or tank used to receive and collect liquid material (condensed) from the overhead condenser of a distillation unit and from which the condensed liquid is pumped to larger storage tanks or other process units.

Distillation operation means an operation, either batch or continuous, separating one or more feed stream(s) into two or more exit streams, each exit stream having component concentrations different from those in the feed stream(s). The separation is achieved by the redistribution of the components between the liquid and vapor phase as they approach equilibrium within the distillation unit.

Double block and bleed system means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

Equipment means each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, or flange or other connector, and any control devices or systems required by this subpart.

Flame zone means the portion of the combustion chamber in a boiler occupied by the flame envelope.

Flow indicator means a device that indicates whether gas flow is present in a vent stream.

First attempt at repair means to take rapid action for the purpose of stopping or reducing leakage of organic material to the atmosphere using best practices.

Fractionation operation means a distillation operation or method used to separate a mixture of several volatile components of different boiling points in successive stages, each stage removing from the mixture some proportion of one of the components.

Hazardous waste management unit shutdown means a work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit. An unscheduled work practice or operational procedure that stops operation of a hazardous waste management unit or part of a hazardous waste management unit for less than 24 hours is not a hazardous waste management unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping operation are not hazardous waste management unit shutdowns.

Hot well means a container for collecting condensate as in a steam condenser serving a vacuum-jet or steam-jet ejector.

In gas/vapor service means that the piece of equipment contains or contacts a hazardous waste stream that is in the gaseous state at operating conditions.

In heavy liquid service means that the piece of equipment is not in gas/vapor service or in light liquid service.

In light liquid service means that the piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the organic components in the stream is greater than 0.3 kilopascals (kPa) at 20 °C, the total concentration of the pure organic components having a vapor pressure greater than 0.3 kilopascals (kPa) at 20 °C is equal to or greater than 20 percent by weight, and the fluid is a liquid at operating conditions.

In situ sampling systems means non-extractive samplers or in-line samplers.

In vacuum service means that equipment is operating at an internal pressure that is at least 5 kPa below ambient pressure.

Malfunction means any sudden failure of a control device or a hazardous waste management unit or failure of a hazardous waste management unit to operate in a normal or usual manner, so that organic emissions are increased.

Open-ended valve or line means any valve, except pressure relief valves, having one side of the valve seat in contact with hazardous waste and one side open to the atmosphere, either directly or through open piping.

Pressure release means the emission of materials resulting from the system pressure being greater than the set pressure of the pressure relief device.

Process heater means a device that transfers heat liberated by burning fuel to fluids contained in tubes, including all fluids except water that are heated to produce steam.

Process vent means any open-ended pipe or stack that is vented to the atmosphere either directly, through a vacuum-producing system, or through a tank (e.g., distillate receiver, condenser, bottoms receiver, surge control tank, separator tank, or hot well) associated with hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations.

Repaired means that equipment is adjusted, or otherwise altered, to eliminate a leak.

Sampling connection system means an assembly of equipment within a process or waste management unit used during periods of representative operation to take samples of the process or waste fluid. Equipment used to take non-routine grab samples is not considered a sampling connection system.

Sensor means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH, or liquid level.

Separator tank means a device used for separation of two immiscible liquids.

Solvent extraction operation means an operation or method of separation in which a solid or solution is contacted with a liquid solvent (the two being mutually insoluble) to preferentially dissolve and transfer one or more components into the solvent.

Startup means the setting in operation of a hazardous waste management unit or control device for any purpose.

Steam stripping operation means a distillation operation in which vaporization of the volatile constituents of a liquid mixture takes place by the introduction of steam directly into the charge.

Surge control tank means a large-sized pipe or storage reservoir sufficient to contain the surging liquid discharge of the process tank to which it is connected.

Thin-film evaporation operation means a distillation operation that employs a heating surface consisting of a large diameter tube that may be either straight or tapered, horizontal or vertical. Liquid is spread on the tube wall by a rotating assembly of blades that maintain a close clearance from the wall or actually ride on the film of liquid on the wall.

Vapor incinerator means any enclosed combustion device that is used for destroying organic compounds and does not extract energy in the form of steam or process heat.

Vented means discharged through an opening, typically an open-ended pipe or stack, allowing the passage of a stream of liquids, gases, or fumes into the atmosphere. The passage of liquids, gases, or fumes is caused by mechanical means such as compressors or vacuum-producing systems or by process-related means such as evaporation produced by heating and not caused by tank loading and unloading (working losses) or by natural means such as diurnal temperature changes.

[55 FR 25494, June 21, 1990, as amended at 62 FR 64657, Dec. 8, 1997; 64 FR 3389, Jan. 21, 1999]

§ 264.1032 Standards: Process vents.

(a) The owner or operator of a facility with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations managing hazardous wastes with organic concentrations of at least 10 ppmw shall either:

(1) Reduce total organic emissions from all affected process vents at the facility below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr), or

(2) Reduce, by use of a control device, total organic emissions from all affected process vents at the facility by 95 weight percent.

(b) If the owner or operator installs a closed-vent system and control device to comply with the provisions of paragraph (a) of this section the closed-vent system and control device must meet the requirements of § 264.1033.

(c) Determinations of vent emissions and emission reductions or total organic compound concentrations achieved by add-on control devices may be based on engineering calculations or performance tests. If performance tests are used to determine vent emissions, emission reductions, or total organic compound concentrations achieved by add-on control devices, the performance tests must conform with the requirements of § 264.1034(c).

(d) When an owner or operator and the Regional Administrator do not agree on determinations of vent emissions and/or emission reductions or total organic compound concentrations achieved by add-on control devices based on engineering calculations, the procedures in § 264.1034(c) shall be used to resolve the disagreement.

§ 264.1033 Standards: Closed-vent systems and control devices.

(a)(1) Owners or operators of closed-vent systems and control devices used to comply with provisions of this part shall comply with the provisions of this section.

(2)(i) The owner or operator of an existing facility who cannot install a closed-vent system and control device to comply with the provisions of this subpart on the effective date that the facility becomes subject to the provisions of this subpart must prepare an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The controls must be installed as soon as possible, but the implementation schedule may allow up to 30 months after the effective date that the facility becomes subject to this subpart for installation and startup.

(ii) Any unit that begins operation after December 21, 1990, and is subject to the provisions of this subpart when operation begins, must comply with the rules immediately (i.e., must have control devices installed and operating on startup of the affected unit); the 30-month implementation schedule does not apply.

(iii) The owner or operator of any facility in existence on the effective date of a statutory or EPA regulatory amendment that renders the facility subject to this subpart shall comply with all requirements of this subpart as soon as practicable but no later than 30 months after the amendment's effective date. When control equipment required by this subpart can not be installed and begin operation by the effective date of the amendment, the facility owner or operator shall prepare an implementation schedule that includes the following information: Specific calendar dates for award of contracts or issuance of purchase orders for the control equipment, initiation of on-site installation of the control equipment, completion of the control equipment installation, and performance of any testing to demonstrate that the installed equipment meets the applicable standards of this subpart. The owner or operator shall enter the implementation schedule in the operating record or in a permanent, readily available file located at the facility.

(iv) Owners and operators of facilities and units that become newly subject to the requirements of this subpart after December 8, 1997, due to an action other than those described in paragraph (a)(2)(iii) of this section must comply with all applicable requirements immediately (i.e., must have control devices installed and operating on the date the facility or unit becomes subject to this subpart; the 30-month implementation schedule does not apply).

(b) A control device involving vapor recovery (e.g., a condenser or adsorber) shall be designed and operated to recover the organic vapors vented to it with an efficiency of 95 weight percent or greater unless the total organic emission limits of § 264.1032(a)(1) for all affected process vents can be attained at an efficiency less than 95 weight percent.

(c) An enclosed combustion device (e.g., a vapor incinerator, boiler, or process heater) shall be designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater; to achieve a total organic compound concentration of 20 ppmv, expressed as the sum of the actual compounds, not carbon equivalents, on a dry basis corrected to 3 percent oxygen; or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760 °C. If a boiler or process heater is used as the control device, then the vent stream shall be introduced into the flame zone of the boiler or process heater.

(d)(1) A flare shall be designed for and operated with no visible emissions as determined by the methods specified in paragraph (e)(1) of this section, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) A flare shall be operated with a flame present at all times, as determined by the methods specified in paragraph (f)(2)(iii) of this section.

(3) A flare shall be used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or if the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (e)(2) of this section.

(4)(i) A steam-assisted or nonassisted flare shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, less than 18.3 m/s (60 ft/s), except as provided in paragraphs (d)(4) (ii) and (iii) of this section.

(ii) A steam-assisted or nonassisted flare designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s) is allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) A steam-assisted or nonassisted flare designed for and operated with an exit velocity, as determined by the methods specified in paragraph (e)(3) of this section, less than the velocity, V_{max}, as determined by the method specified in paragraph (e)(4) of this section and less than 122 m/s (400 ft/s) is allowed.

(5) An air-assisted flare shall be designed and operated with an exit velocity less than the velocity, V_{max}, as determined by the method specified in paragraph (e)(5) of this section.

(6) A flare used to comply with this section shall be steam-assisted, air-assisted, or nonassisted.

(e)(1) Reference Method 22 in 40 CFR part 60 shall be used to determine the compliance of a flare with the visible emission provisions of this subpart. The observation period is 2 hours and shall be used according to Method 22.

(2) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K\left[\sum_{i=1}^{n} C_i H_i\right]$$

where:

H_T=Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 °C and 760 mm Hg, but the standard temperature for determining the volume corresponding to 1 mol is 20 °C;

K=Constant, 1.74×10^{-7} (1/ppm) (g mol/scm) (MJ/kcal) where standard temperature for (g mol/scm) is 20 °C;

C_i=Concentration of sample component i in ppm on a wet basis, as measured for organics by Reference Method 18 in 40 CFR part 60 and measured for hydrogen and carbon monoxide by ASTM D 1946–82 (incorporated by reference as specified in § 260.11); and

H_i=Net heat of combustion of sample component i, kcal/9 mol at 25 °C and 760 mm Hg. The heats of combustion may be determined using ASTM D 2382–83 (incorporated by reference as specified in § 260.11) if published values are not available or cannot be calculated.

(3) The actual exit velocity of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D in 40 CFR part 60 as appropriate, by the unobstructed (free) cross-sectional area of the flare tip.

(4) The maximum allowed velocity in m/s, V_{max}, for a flare complying with paragraph (d)(4)(iii) of this section shall be determined by the following equation:

$$\mathrm{Log}_{10}(V_{max})=(H_T+28.8)/31.7$$

where:

28.8=Constant,

31.7=Constant,

H_T=The net heating value as determined in paragraph (e)(2) of this section.

(5) The maximum allowed velocity in m/s, V_{max}, for an air-assisted flare shall be determined by the following equation:

$$V_{max}=8.706+0.7084\ (H_T)$$

where:

8.706=Constant,

0.7084=Constant,

H_T=The net heating value as determined in paragraph (e)(2) of this section.

(f) The owner or operator shall monitor and inspect each control device required to comply with this section to ensure proper operation and maintenance of the control device by implementing the following requirements:

(1) Install, calibrate, maintain, and operate according to the manufacturer's specifications a flow indicator that provides a record of vent stream flow from each affected process vent to the control device at least once every hour. The flow indicator sensor shall be installed in the vent stream at the nearest feasible point to the control device inlet but before the point at which the vent streams are combined.

(2) Install, calibrate, maintain, and operate according to the manufacturer's specifications a device to continuously monitor control device operation as specified below:

(i) For a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. The temperature sensor shall be installed at a location in the combustion chamber downstream of the combustion zone.

(ii) For a catalytic vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. One temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet and a second temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed outlet.

(iii) For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame.

(iv) For a boiler or process heater having a design heat input capacity less than 44 MW, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ±1 percent of the temperature being monitored in °C or ±0.5 °C, whichever is greater. The temperature sensor shall be installed at a location in the furnace downstream of the combustion zone.

(v) For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW, a monitoring device equipped with a continuous recorder to measure a parameter(s) that indicates good combustion operating practices are being used.

(vi) For a condenser, either:

(A) A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the condenser, or

(B) A temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature with an accuracy of ±1 percent of the temperature being monitored in degrees Celsius (°C) or ±0.5 °C, whichever is greater. The temperature sensor shall be installed at a location in the exhaust vent stream from the condenser exit (i.e., product side).

(vii) For a carbon adsorption system that regenerates the carbon bed directly in the control device such as a fixed-bed carbon adsorber, either:

(A) A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the carbon bed, or

(B) A monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular. predetermined time cycle.

(3) Inspect the readings from each monitoring device required by paragraphs (f)(1) and (2) of this section at least once each operating day to check control device operation and, if necessary, immediately implement the corrective measures necessary to ensure the control device operates in compliance with the requirements of this section.

(g) An owner or operator using a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon at a regular, predetermined time interval that is no longer than the carbon service life established as a requirement of § 264.1035(b)(4)(iii)(F).

(h) An owner or operator using a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon on a regular basis by using one of the following procedures:

(1) Monitor the concentration level of the organic compounds in the exhaust vent stream from the carbon adsorption system on a regular schedule, and replace the existing carbon with fresh carbon immediately when carbon breakthrough is indicated. The monitoring frequency shall be daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity established as a requirement of § 264.1035(b)(4)(iii)(G), whichever is longer.

(2) Replace the existing carbon with fresh carbon at a regular, predetermined time interval that is less than the design carbon replacement interval established as a requirement of § 264.1035(b)(4)(iii)(G).

(i) An alternative operational or process parameter may be monitored if it can be demonstrated that another parameter will ensure that the control device is operated in conformance with these standards and the control device's design specifications.

(j) An owner or operator of an affected facility seeking to comply with the provisions of this part by using a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system is required to develop documentation including sufficient information to describe the control device operation and identify the process parameter or parameters that indicate proper operation and maintenance of the control device.

(k) A closed-vent system shall meet either of the following design requirements:

(1) A closed-vent system shall be designed to operate with no detectable emissions, as indicated by an instrument reading of less than 500 ppmv above background as determined by the procedure in § 264.1034(b) of this subpart, and by visual inspections; or

(2) A closed-vent system shall be designed to operate at a pressure below atmospheric pressure. The system shall be equipped with at least one pressure gauge or other pressure measurement device that can be read from a readily accessible location to verify that negative pressure is being maintained in the closed-vent system when the control device is operating.

(l) The owner or operator shall monitor and inspect each closed-vent system required to comply with this section to ensure proper operation and maintenance of the closed-vent system by implementing the following requirements:

(1) Each closed-vent system that is used to comply with paragraph (k)(1) of this section shall be inspected and monitored in accordance with the following requirements:

(i) An initial leak detection monitoring of the closed-vent system shall be conducted by the owner or operator on or before the date that the system becomes subject to this section. The owner or operator shall monitor the closed-vent system components and connections using the procedures specified in § 264.1034(b) of this subpart to demonstrate that the closed-vent system operates with no detectable emissions, as indicated by an instrument reading of less than 500 ppmv above background.

(ii) After initial leak detection monitoring required in paragraph (l)(1)(i) of this section, the owner or operator shall inspect and monitor the closed-vent system as follows:

(A) Closed-vent system joints, seams, or other connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of hard piping or a bolted and gasketed ducting flange) shall be visually inspected at least once per year to check for defects that could result in air pollutant emissions. The owner or operator shall monitor a component or connection using the procedures specified in § 264.1034(b) of this subpart to demonstrate that it operates with no detectable emissions following any time the component is repaired or replaced (e.g., a section of damaged hard piping is replaced with new hard piping) or the connection is unsealed (e.g., a flange is unbolted).

(B) Closed-vent system components or connections other than those specified in paragraph (l)(1)(ii)(A) of this section shall be monitored annually and at other times as requested by the Regional Administrator, except as provided for in paragraph (o) of this section, using the procedures specified in § 264.1034(b) of this subpart to demonstrate that the components or connections operate with no detectable emissions.

(iii) In the event that a defect or leak is detected, the owner or operator shall repair the defect or leak in accordance with the requirements of paragraph (l)(3) of this section.

(iv) The owner or operator shall maintain a record of the inspection and monitoring in accordance with the requirements specified in § 264.1035 of this subpart.

(2) Each closed-vent system that is used to comply with paragraph (k)(2) of this section shall be inspected and monitored in accordance with the following requirements:

(i) The closed-vent system shall be visually inspected by the owner or operator to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in ductwork or piping or loose connections.

(ii) The owner or operator shall perform an initial inspection of the closed-vent system on or before the date that the system becomes subject to this section. Thereafter, the owner or operator shall perform the inspections at least once every year.

(iii) In the event that a defect or leak is detected, the owner or operator shall repair the defect in accordance with the requirements of paragraph (l)(3) of this section.

(iv) The owner or operator shall maintain a record of the inspection and monitoring in accordance with the requirements specified in § 264.1035 of this subpart.

(3) The owner or operator shall repair all detected defects as follows:

(i) Detectable emissions, as indicated by visual inspection, or by an instrument reading greater than 500 ppmv above background, shall be controlled as soon as practicable, but not later than 15 calendar days after the emission is detected, except as provided for in paragraph (l)(3)(iii) of this section.

(ii) A first attempt at repair shall be made no later than 5 calendar days after the emission is detected.

(iii) Delay of repair of a closed-vent system for which leaks have been detected is allowed if the repair is technically infeasible without a process unit shutdown, or if the owner or operator determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be completed by the end of the next process unit shutdown.

(iv) The owner or operator shall maintain a record of the defect repair in accordance with the requirements specified in § 264.1035 of this subpart.

(m) Closed-vent systems and control devices used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

(n) The owner or operator using a carbon adsorption system to control air pollutant emissions shall document that all carbon that is a hazardous waste and that is removed from the control device is managed in one of the following manners, regardless of the average volatile organic concentration of the carbon:

(1) Regenerated or reactivated in a thermal treatment unit that meets one of the following:

(i) The owner or operator of the unit has been issued a final permit under 40 CFR part 270 which implements the requirements of subpart X of this part; or

(ii) The unit is equipped with and operating air emission controls in accordance with the applicable requirements of subparts AA and CC of either this part or of 40 CFR part 265; or

(iii) The unit is equipped with and operating air emission controls in accordance with a national emission standard for hazardous air pollutants under 40 CFR part 61 or 40 CFR part 63.

(2) Incinerated in a hazardous waste incinerator for which the owner or operator either:

(i) Has been issued a final permit under 40 CFR part 270 which implements the requirements of subpart O of this part; or

(ii) Has designed and operates the incinerator in accordance with the interim status requirements of 40 CFR part 265, subpart O.

(3) Burned in a boiler or industrial furnace for which the owner or operator either:

(i) Has been issued a final permit under 40 CFR part 270 which implements the requirements of 40 CFR part 266, subpart H; or

(ii) Has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of 40 CFR part 266, subpart H.

(o) Any components of a closed-vent system that are designated, as described in § 264.1035(c)(9) of this subpart, as unsafe to monitor are exempt from the requirements of paragraph (l)(1)(ii)(B) of this section if:

(1) The owner or operator of the closed-vent system determines that the components of the closed-vent system are unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (l)(1)(ii)(B) of this section; and

(2) The owner or operator of the closed-vent system adheres to a written plan that requires monitoring the closed-vent system components using the procedure specified in paragraph (l)(1)(ii)(B) of this section as frequently as practicable during safe-to-monitor times.

[55 FR 25494, June 21, 1990, as amended at 56 FR 19290, Apr. 26, 1991; 59 FR 62927, Dec. 6, 1994; 61 FR 4911, Feb. 9, 1996; 61 FR 59950, Nov. 25, 1996; 62 FR 64657, Dec. 8, 1997]

§ 264.1034 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.

(b) When a closed-vent system is tested for compliance with no detectable emissions, as required in § 264.1033(l) of this subpart, the test shall comply with the following requirements:

(1) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.

(2) (6) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air).

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The background level shall be determined as set forth in Reference Method 21.

(6) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(7) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(c) Performance tests to determine compliance with § 264.1032(a) and with the total organic compound concentration limit of § 264.1033(c) shall comply with the following:

(1) Performance tests to determine total organic compound concentrations and mass flow rates entering and exiting control devices shall be conducted and data reduced in accordance with the following reference methods and calculation procedures:

(i) Method 2 in 40 CFR part 60 for velocity and volumetric flow rate.

(ii) Method 18 in 40 CFR part 60 for organic content.

(iii) Each performance test shall consist of three separate runs; each run conducted for at least 1 hour under the conditions that exist when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. For the purpose of determining total organic compound concentrations and mass flow rates, the average of results of all runs shall apply. The average shall be computed on a time-weighted basis.

(iv) Total organic mass flow rates shall be determined by the following equation:

$$E_h = Q_{2sd} \left\{ \sum_{i=1}^{n} C_i MW_i \right\} [0.0416][10^{-6}]$$

where:

E_h=Total organic mass flow rate, kg/h;
Q_{sd}=Volumetric flow rate of gases entering or exiting control device, as determined by Method 2, dscm/h;
n=Number of organic compounds in the vent gas;
C_i=Organic concentration in ppm, dry basis, of compound i in the vent gas, as determined by Method 18;
MW_i=Molecular weight of organic compound i in the vent gas, kg/kg-mol;
0.0416=Conversion factor for molar volume, kg-mol/m^3 (@ 293 K and 760 mm Hg);
10^{-6}=Conversion from ppm, ppm^{-1}.

(v) The annual total organic emission rate shall be determined by the following equation:

$E_A=(E_h)(H)$

where:

E_A=Total organic mass emission rate, kg/y;
E_h=Total organic mass flow rate for the process vent, kg/h;
H=Total annual hours of operations for the affected unit, h.

(vi) Total organic emissions from all affected process vents at the facility shall be determined by summing the hourly total organic mass emission rates (E_h as determined in paragraph (c)(1)(iv) of this section) and by summing the annual total organic mass emission rates (E_A, as determined in paragraph (c)(1)(v) of this section) for all affected process vents at the facility.

(2) The owner or operator shall record such process information as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

(3) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:

(i) Sampling ports adequate for the test methods specified in paragraph (c)(1) of this section.

(ii) Safe sampling platform(s).

(iii) Safe access to sampling platform(s).

(iv) Utilities for sampling and testing equipment.

(4) For the purpose of making compliance determinations, the time-weighted average of the results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the Regional Administrator's approval, be determined using the average of the results of the two other runs.

(d) To show that a process vent associated with a hazardous waste distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation is not subject to the requirements of this subpart, the owner or operator must make an initial determination that the time-weighted, annual average total organic concentration of the waste managed by the waste management unit is less than 10 ppmw using one of the following two methods:

(1) Direct measurement of the organic concentration of the waste using the following procedures:

(i) The owner or operator must take a minimum of four grab samples of waste for each waste stream managed in the affected unit under process conditions expected to cause the maximum waste organic concentration.

(ii) For waste generated onsite, the grab samples must be collected at a point before the waste is exposed to the atmosphere such as in an enclosed pipe or other closed system that is used to transfer the waste after generation to the first affected distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation. For waste generated offsite, the grab samples must be collected at the inlet to the first waste management unit that receives the waste provided the waste has been transferred to the facility in a closed system such as a tank truck and the waste is not diluted or mixed with other waste.

(iii) Each sample shall be analyzed and the total organic concentration of the sample shall be computed using

Method 9060 or 8260 of SW–846 (incorporated by reference under § 260.11).

(iv) The arithmetic mean of the results of the analyses of the four samples shall apply for each waste stream managed in the unit in determining the time-weighted, annual average total organic concentration of the waste. The time-weighted average is to be calculated using the annual quantity of each waste stream processed and the mean organic concentration of each waste stream managed in the unit.

(2) Using knowledge of the waste to determine that its total organic concentration is less than 10 ppmw. Documentation of the waste determination is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to generate a waste stream having a total organic content less than 10 ppmw, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

(e) The determination that distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations manage hazardous wastes with time-weighted, annual average total organic concentrations less than 10 ppmw shall be made as follows:

(1) By the effective date that the facility becomes subject to the provisions of this subpart or by the date when the waste is first managed in a waste management unit, whichever is later, and

(2) For continuously generated waste, annually, or

(3) Whenever there is a change in the waste being managed or a change in the process that generates or treats the waste.

(f) When an owner or operator and the Regional Administrator do not agree on whether a distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operation manages a hazardous waste with organic concentrations of at least 10 ppmw based on knowledge of the waste, the procedures in Method 8260 of SW–846 (incorporated by reference under § 260.11) may be used to resolve the dispute.

[55 FR 25494, June 21, 1990, as amended at 61 FR 59951, Nov. 25, 1996; 62 FR 32462, June 13, 1997]

§ 264.1035 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one hazardous waste management unit subject to the provisions of this subpart may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

(b) Owners and operators must record the following information in the facility operating record:

(1) For facilities that comply with the provisions of § 264.1033(a)(2), an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The schedule must also include a rationale of why the installation cannot be completed at an earlier date. The implementation schedule must be in the facility operating record by the effective date that the facility becomes subject to the provisions of this subpart.

(2) Up-to-date documentation of compliance with the process vent standards in § 264.1032, including:

(i) Information and data identifying all affected process vents, annual throughput and operating hours of each affected unit, estimated emission rates for each affected vent and for the overall facility (i.e., the total emissions for all affected vents at the facility), and the approximate location within the facility of each affected unit (e.g., identify the hazardous waste management units on a facility plot plan).

(ii) Information and data supporting determinations of vent emissions and emission reductions achieved by add-on control devices based on engineering calculations or source tests. For the purpose of determining compliance, determinations of vent emissions and emission reductions must be made using operating parameter values (e.g., temperatures, flow rates, or vent stream organic compounds and concentrations) that represent the conditions that result in maximum organic emissions, such as when the waste management unit is operating at the highest load or capacity level reasonably expected to occur. If the owner or operator takes any action (e.g., managing a waste of different composition or increasing operating hours of affected waste management units) that would result in an increase in total organic emissions from affected process vents at the facility, then a new determination is required.

(3) Where an owner or operator chooses to use test data to determine the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan. The test plan must include:

(i) A description of how it is determined that the planned test is going to be conducted when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. This shall include the estimated or design flow rate and organic content of each vent stream and define the acceptable operating ranges of key process and control device parameters during the test program.

(ii) A detailed engineering description of the closed-vent system and control device including:

(A) Manufacturer's name and model number of control device.

(B) Type of control device.

(C) Dimensions of the control device.

(D) Capacity.

(E) Construction materials.

(iii) A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, the equipment to be used, sampling and monitoring frequency, and planned analytical procedures for sample analysis.

(4) Documentation of compliance with § 264.1033 shall include the following information:

(i) A list of all information references and sources used in preparing the documentation.

(ii) Records, including the dates, of each compliance test required by § 264.1033(k).

(iii) If engineering calculations are used, a design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of ''APTI Course 415: Control of Gaseous Emissions'' (incorporated by reference as specified in § 260.11) or other engineering texts acceptable to the Regional Administrator that present basic control device design information. Documentation provided by the control device manufacturer or vendor that describes the control device design in accordance with paragraphs (b)(4)(iii)(A) through (b)(4)(iii)(G) of this section may be used to comply with this requirement. The design analysis shall address the vent stream characteristics and control device operation parameters as specified below.

(A) For a thermal vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperature in the combustion zone and the combustion zone residence time.

(B) For a catalytic vapor incinerator, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average temperatures across the catalyst bed inlet and outlet.

(C) For a boiler or process heater, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also establish the design minimum and average flame zone temperatures, combustion zone residence time, and description of method and location where the vent stream is introduced into the combustion zone.

(D) For a flare, the design analysis shall consider the vent stream composition, constituent concentrations, and flow rate. The design analysis shall also consider the requirements specified in § 264.1033(d).

(E) For a condenser, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic compound concentration level, design average temperature of the condenser exhaust vent stream, and design average temperatures of the coolant fluid at the condenser inlet and outlet.

(F) For a carbon adsorption system such as a fixed-bed adsorber that regenerates the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design exhaust vent stream organic compound concentration level, number and capacity of carbon beds, type and working capacity of activated carbon used for carbon beds, design total steam flow over the period of each complete carbon bed regeneration cycle, duration of the carbon bed steaming and cooling/drying cycles, design carbon bed temperature after regeneration, design carbon bed regeneration time, and design service life of carbon.

(G) For a carbon adsorption system such as a carbon canister that does not regenerate the carbon bed directly onsite in the control device, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic concentration level, capacity of carbon bed, type and working capacity of activated carbon used for carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule.

(iv) A statement signed and dated by the owner or operator certifying that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.

(v) A statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 percent or greater unless the total organic concentration limit of § 264.1032(a) is achieved at an efficiency less than 95 weight percent or the total organic emission limits of § 264.1032(a) for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent. A statement provided by the control device manufacturer or vendor certifying that the control equipment meets the design specifications may be used to comply with this requirement.

(vi) If performance tests are used to demonstrate compliance, all test results.

(c) Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of this part shall be recorded and kept up-to-date in the facility operating record. The information shall include:

(1) Description and date of each modification that is made to the closed-vent system or control device design.

(2) Identification of operating parameter, description of monitoring device, and diagram of monitoring sensor location or locations used to comply with § 264.1033 (f)(1) and (f)(2).

(3) Monitoring, operating, and inspection information required by paragraphs (f) through (k) of § 264.1033.

(4) Date, time, and duration of each period that occurs while the control device is operating when any monitored parameter exceeds the value established in the control device design analysis as specified below:

(i) For a thermal vapor incinerator designed to operate with a minimum residence time of 0.50 second at a minimum temperature of 760 °C. period when the combustion temperature is below 760 °C.

(ii) For a thermal vapor incinerator designed to operate with an organic emission reduction efficiency of 95 weight percent or greater period when the combustion zone temperature is more than 28 °C below the design average combustion zone temperature established as a requirement of paragraph (b)(4)(iii)(A) of this section.

(iii) For a catalytic vapor incinerator, period when:

(A) Temperature of the vent stream at the catalyst bed inlet is more than 28 °C below the average temperature of the inlet vent stream established as a requirement of paragraph (b)(4)(iii)(B) of this section, or

(B) Temperature difference across the catalyst bed is less than 80 percent of the design average temperature difference established as a requirement of paragraph (b)(4)(iii)(B) of this section.

(iv) For a boiler or process heater, period when:

(A) Flame zone temperature is more than 28 °C below the design average flame zone temperature established as a requirement of paragraph (b)(4)(iii)(C) of this section, or

(B) Position changes where the vent stream is introduced to the combustion zone from the location established as a requirement of paragraph (b)(4)(iii)(C) of this section.

(v) For a flare, period when the pilot flame is not ignited.

(vi) For a condenser that complies with § 264.1033(f)(2)(vi)(A), period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the condenser are more than 20 percent greater than the design outlet organic compound concentration level established as a requirement of paragraph (b)(4)(iii)(E) of this section.

(vii) For a condenser that complies with § 264.1033(f)(2)(vi)(B), period when:

(A) Temperature of the exhaust vent stream from the condenser is more than 6 °C above the design average exhaust vent stream temperature established as a requirement of paragraph (b)(4)(iii)(E) of this section; or

(B) Temperature of the coolant fluid exiting the condenser is more than 6 °C above the design average coolant fluid temperature at the condenser outlet established as a requirement of paragraph (b)(4)(iii)(E) of this section.

(viii) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with § 264.1033(f)(2)(vii)(A), period when the organic compound concentration level or readings of organic compounds in the exhaust vent stream from the carbon bed are more than 20 percent greater than the design exhaust vent stream organic compound concentration level established as a requirement of paragraph (b)(4)(iii)(F) of this section.

(ix) For a carbon adsorption system such as a fixed-bed carbon adsorber that regenerates the carbon bed directly onsite in the control device and complies with § 264.1033(f)(2)(vii)(B), period when the vent stream continues to flow through the control device beyond the predetermined carbon bed regeneration time established as a requirement of paragraph (b)(4)(iii)(F) of this section.

(5) Explanation for each period recorded under paragraph (4) of the cause for control device operating parameter exceeding the design value and the measures implemented to correct the control device operation.

(6) For a carbon adsorption system operated subject to requirements specified in § 264.1033(g) or § 264.1033(h)(2), date when existing carbon in the control device is replaced with fresh carbon.

(7) For a carbon adsorption system operated subject to requirements specified in § 264.1033(h)(1), a log that records:

(i) Date and time when control device is monitored for carbon breakthrough and the monitoring device reading.

(ii) Date when existing carbon in the control device is replaced with fresh carbon.

(8) Date of each control device startup and shutdown.

(9) An owner or operator designating any components of a closed-vent system as unsafe to monitor pursuant to § 264.1033(o) of this subpart shall record in a log that is kept in the facility operating record the identification of closed-vent system components that are designated as unsafe to monitor in accordance with the requirements of

§ 264.1033(o) of this subpart, an explanation for each closed-vent system component stating why the closed-vent system component is unsafe to monitor, and the plan for monitoring each closed-vent system component.

(10) When each leak is detected as specified in § 264.1033(l) of this subpart, the following information shall be recorded:

(i) The instrument identification number, the closed-vent system component identification number, and the operator name, initials, or identification number.

(ii) The date the leak was detected and the date of first attempt to repair the leak.

(iii) The date of successful repair of the leak.

(iv) Maximum instrument reading measured by Method 21 of 40 CFR part 60, appendix A after it is successfully repaired or determined to be nonrepairable.

(v) ''Repair delayed'' and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(A) The owner or operator may develop a written procedure that identifies the conditions that justify a delay of repair. In such cases, reasons for delay of repair may be documented by citing the relevant sections of the written procedure.

(B) If delay of repair was caused by depletion of stocked parts, there must be documentation that the spare parts were sufficiently stocked on-site before depletion and the reason for depletion.

(d) Records of the monitoring, operating, and inspection information required by paragraphs (c)(3) through (c)(10) of this section shall be maintained by the owner or operator for at least 3 years following the date of each occurrence, measurement, maintenance, corrective action, or record.

(e) For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, the Regional Administrator will specify the appropriate recordkeeping requirements.

(f) Up-to-date information and data used to determine whether or not a process vent is subject to the requirements in § 264.1032 including supporting documentation as required by § 264.1034(d)(2) when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used, shall be recorded in a log that is kept in the facility operating record.

[55 FR 25494, June 21, 1990, as amended at 56 FR 19290, Apr. 26, 1991; 61 FR 59952, Nov. 25, 1996]

§ 264.1036 Reporting requirements.

(a) A semiannual report shall be submitted by owners and operators subject to the requirements of this subpart to the Regional Administrator by dates specified by the Regional Administrator. The report shall include the following information:

(1) The Environmental Protection Agency identification number, name, and address of the facility.

(2) For each month during the semiannual reporting period, dates when the control device exceeded or operated outside of the design specifications as defined in § 264.1035(c)(4) and as indicated by the control device monitoring required by § 264.1033(f) and such exceedances were not corrected within 24 hours, or that a flare operated with visible emissions as defined in § 264.1033(d) and as determined by Method 22 monitoring, the duration and cause of each exceedance or visible emissions, and any corrective measures taken.

(b) If, during the semiannual reporting period, the control device does not exceed or operate outside of the design specifications as defined in § 264.1035(c)(4) for more than 24 hours or a flare does not operate with visible emissions as defined in § 264.1033(d), a report to the Regional Administrator is not required.

§§ 264.1037—264.1049 [Reserved]

Appendix H

40 CFR Part 264 Subpart BB

Air Emission Standards for Equipment Leaks

§ 264.1050 Applicability.

(a) The regulations in this subpart apply to owners and operators of facilities that treat, store, or dispose of hazardous wastes (except as provided in § 264.1).

(b) Except as provided in § 264.1064(k), this subpart applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in one of the following:

(1) A unit that is subject to the permitting requirements of 40 CFR part 270, or

(2) A unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a ''90-day'' tank or container) and that is located at a hazardous waste management facility otherwise subject to the permitting requirements of 40 CFR part 270, or

(3) A unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a ''90-day'' tank or container) and is not a recycling unit under the provisions of 40 CFR 261.6.

(c) For the owner or operator of a facility subject to this subpart and who received a final permit under RCRA section 3005 prior to December 6, 1996, the requirements of this subpart shall be incorporated into the permit when the permit is reissued in accordance with the requirements of 40 CFR 124.15 or reviewed in accordance with the requirements of 40 CFR 270.50(d). Until such date when the owner or operator receives a final permit incorporating the requirements of this subpart, the owner or operator is subject to the requirements of 40 CFR part 265, subpart BB.

(d) Each piece of equipment to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.

(e) Equipment that is in vacuum service is excluded from the requirements of § 264.1052 to § 264.1060 if it is identified as required in § 264.1064(g)(5).

(f) Equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year is excluded from the requirements of §§ 264.1052 through 264.1060 of this subpart if it is identified, as required in § 264,1064(g)(6) of this subpart.

(g) The requirements of this subpart do not apply to the pharmaceutical manufacturing facility, commonly referred to as the Stonewall Plant, located at Route 340 South, Elkton, Virginia, provided that facility is operated in compliance with the requirements contained in a Clean Air Act permit issued pursuant to 40 CFR 52.2454. The requirements of this subpart shall apply to the facility upon termination of the Clean Air Act permit issued pursuant to 40 CFR 52.2454.

[NOTE: The requirements of §§ 264.1052 through 264.1065 apply to equipment associated with hazardous waste recycling units previously exempt under § 261.6(c)(1). Other exemptions under §§ 261.4, and 264.1(g) are not affected by these requirements.]

[55 FR 25501, June 21, 1990, as amended at 61 FR 59952, Nov. 25, 1996; 62 FR 52641, Oct. 8, 1997; 62 FR 64657, Dec. 8, 1997]

§ 264.1051 Definitions.

As used in this subpart, all terms shall have the meaning given them in § 264.1031, the Act, and parts 260–266.

§ 264.1052 Standards: Pumps in light liquid service.

(a)(1) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in § 264.1063(b), except as provided in paragraphs (d), (e), and (f) of this section.

(2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(b)(1) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(2) If there are indications of liquids dripping from the pump seal, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 264.1059.

(2) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a) of this section, *provided* the following requirements are met:

(1) Each dual mechanical seal system must be:

(i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure, or

(ii) Equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device that complies with the requirements of § 264.1060, or

(iii) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.

(2) The barrier fluid system must not be a hazardous waste with organic concentrations 10 percent or greater by weight.

(3) Each barrier fluid system must be equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

(4) Each pump must be checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

(5)(i) Each sensor as described in paragraph (d)(3) of this section must be checked daily or be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly.

(ii) The owner or operator must determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(6)(i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in paragraph (d)(5)(ii) of this section, a leak is detected.

(ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 264.1059.

(iii) A first attempt at repair (e.g., relapping the seal) shall be made no later than 5 calendar days after each leak is detected.

(e) Any pump that is designated, as described in § 264.1064(g)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) of this section if the pump meets the following requirements:

(1) Must have no externally actuated shaft penetrating the pump housing.

(2) Must operate with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in § 264.1063(c).

(3) Must be tested for compliance with paragraph (e)(2) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

(f) If any pump is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of § 264.1060, it is exempt from the requirements of paragraphs (a) through (e) of this section.

[55 FR 25501, June 21, 1990, as amended at 56 FR 19290, Apr. 26, 1991]

§ 264.1053 Standards: Compressors.

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of total organic emissions to the atmosphere, except as provided in paragraphs (h) and (i) of this section.

(b) Each compressor seal system as required in paragraph (a) of this section shall be:

(1) Operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure, or

(2) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of § 264.1060, or

(3) Equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to atmosphere.

(c) The barrier fluid must not be a hazardous waste with organic concentrations 10 percent or greater by weight.

(d) Each barrier fluid system as described in paragraphs (a) through (c) of this section shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) of this section shall be checked daily or shall be equipped with an audible alarm that must be checked monthly to ensure that it is functioning properly unless the compressor is located within the boundary of an unmanned plant site, in which case the sensor must be checked daily.

(2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(f) If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under paragraph (e)(2) of this section, a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 264.1059.

(2) A first attempt at repair (e.g., tightening the packing gland) shall be made no later than 5 calendar days after each leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) of this section if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of § 264.1060, except as provided in paragraph (i) of this section.

(i) Any compressor that is designated, as described in § 264.1064(g)(2), for no detectable emissions as indicated by an instrument reading of less than 500 ppm above background is exempt from the requirements of paragraphs (a) through (h) of this section if the compressor:

(1) Is determined to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 264.1063(c).

(2) Is tested for compliance with paragraph (i)(1) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

§ 264.1054 Standards: Pressure relief devices in gas/vapor service.

(a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 264.1063(c).

(b)(1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in § 264.1059.

(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 264.1063(c).

(c) Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device as described in § 264.1060 is exempt from the requirements of paragraphs (a) and (b) of this section.

§ 264.1055 Standards: Sampling connection systems.

(a) Each sampling connection system shall be equipped with a closed-purge, closed-loop, or closed-vent system. This system shall collect the sample purge for return to the process or for routing to the appropriate treatment system. Gases displaced during filling of the sample container are not required to be collected or captured.

(b) Each closed-purge, closed-loop, or closed-vent system as required in paragraph (a) of this section shall meet one of the following requirements:

(1) Return the purged process fluid directly to the process line;

(2) Collect and recycle the purged process fluid; or

(3) Be designed and operated to capture and transport all the purged process fluid to a waste management unit that complies with the applicable requirements of § 264.1084 through § 264.1086 of this subpart or a control device that complies with the requirements of § 264.1060 of this subpart.

(c) *In-situ* sampling systems and sampling systems without purges are exempt from the requirements of paragraphs (a) and (b) of this section.

[61 FR 59952, Nov. 25, 1996]

§ 264.1056 Standards: Open-ended valves or lines.

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve.

(2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring hazardous waste stream flow through the open-ended valve or line.

(b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the hazardous waste stream end is closed before the second valve is closed.

(c) When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) of this section at all other times.

§ 264.1057 Standards: Valves in gas/vapor service or in light liquid service.

(a) Each valve in gas/vapor or light liquid service shall be monitored monthly to detect leaks by the methods specified in § 264.1063(b) and shall comply with paragraphs (b) through (e) of this section, except as provided in paragraphs (f), (g), and (h) of this section, and §§ 264.1061 and 264.1062.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) Any valve for which a leak is not detected for two successive months may be monitored the first month of every succeeding quarter, beginning with the next quarter, until a leak is detected.

(2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for two successive months,

(d)(1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in § 264.1059.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) First attempts at repair include, but are not limited to, the following best practices where practicable:

(1) Tightening of bonnet bolts.

(2) Replacement of bonnet bolts.

(3) Tightening of packing gland nuts.

(4) Injection of lubricant into lubricated packing.

(f) Any valve that is designated, as described in § 264.1064(g)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) of this section if the valve:

(1) Has no external actuating mechanism in contact with the hazardous waste stream.

(2) Is operated with emissions less than 500 ppm above background as determined by the method specified in § 264.1063(c).

(3) Is tested for compliance with paragraph (f)(2) of this section initially upon designation, annually, and at other times as requested by the Regional Administrator.

(g) Any valve that is designated, as described in § 264.1064(h)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) of this section if:

(1) The owner or operator of the valve determines that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a) of this section.

(2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

(h) Any valve that is designated, as described in § 264.1064(h)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) of this section if:

(1) The owner or operator of the valve determines that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.

(2) The hazardous waste management unit within which the valve is located was in operation before June 21, 1990.

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

§ 264.1058 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors.

(a) Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and flanges and other connectors shall be monitored within 5 days by the method specified in § 264.1063(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected. except as provided in § 264.1059.

(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under § 264.1057(e).

(e) Any connector that is inaccessible or is ceramic or ceramic-lined (e.g., porcelain, glass, or glass-lined) is exempt from the monitoring requirements of paragraph (a) of this section and from the recordkeeping requirements of § 264.1064 of this subpart.

[55 FR 25501, June 21, 1990, as amended at 61 FR 59952, Nov. 25, 1996]

§ 264.1059 Standards: Delay of repair.

(a) Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown. In such a case, repair of this equipment shall occur before the end of the next hazardous waste management unit shutdown.

(b) Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the hazardous waste management unit and that does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight.

(c) Delay of repair for valves will be allowed if:

(1) The owner or operator determines that emissions of purged material resulting from immediate repair are greater than the emissions likely to result from delay of repair.

(2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with § 264.1060.

(d) Delay of repair for pumps will be allowed if:

(1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system.

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(e) Delay of repair beyond a hazardous waste management unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the hazardous waste management unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next hazardous waste management unit shutdown will not be allowed unless the next hazardous waste management unit shutdown occurs sooner than 6 months after the first hazardous waste management unit shutdown.

§ 264.1060 Standards: Closed-vent systems and control devices.

(a) Owners and operators of closed-vent systems and control devices subject to this subpart shall comply with the provisions of § 264.1033 of this part.

(b)(1) The owner or operator of an existing facility who cannot install a closed-vent system and control device to comply with the provisions of this subpart on the effective date that the facility becomes subject to the provisions of this subpart must prepare an implementation schedule that includes dates by which the closed-vent system and control device will be installed and in operation. The controls must be installed as soon as possible, but the implementation schedule may allow up to 30 months after the effective date that the facility becomes subject to this subpart for installation and startup.

(2) Any unit that begins operation after December 21, 1990, and is subject to the provisions of this subpart when operation begins, must comply with the rules immediately (i.e., must have control devices installed and operating on startup of the affected unit); the 30-month implementation schedule does not apply.

(3) The owner or operator of any facility in existence on the effective date of a statutory or EPA regulatory amendment that renders the facility subject to this subpart shall comply with all requirements of this subpart as soon as practicable but no later than 30 months after the amendment's effective date. When control equipment required by this subpart can not be installed and begin operation by the effective date of the amendment, the facility owner or operator shall prepare an implementation schedule that includes the following information: Specific calendar dates for award or contracts or issuance of purchase orders for the control equipment, initiation of on-site installation of the control equipment, completion of the control equipment installation, and performance of any testing to demonstrate that the installed equipment meets the applicable standards of this subpart. The owner or operator shall enter the implementation schedule in the operating record or in a permanent, readily available file located at the facility.

(4) Owners and operators of facilities and units that become newly subject to the requirements of this subpart after December 8, 1997, due to an action other than those described in paragraph (b)(3) of this section must comply with all applicable requirements immediately (i.e., must have control devices installed and operating on the date the facility or unit becomes subject to this subpart; the 30-month implementation schedule does not apply).

[62 FR 64657, Dec. 8, 1997]

§ 264.1061 Alternative standards for valves in gas/vapor service or in light liquid service: percentage of valves allowed to leak.

(a) An owner or operator subject to the requirements of § 264.1057 may elect to have all valves within a hazardous waste management unit comply with an alternative standard that allows no greater than 2 percent of the valves to leak.

(b) The following requirements shall be met if an owner or operator decides to comply with the alternative standard of allowing 2 percent of valves to leak:

(1) An owner or operator must notify the Regional Administrator that the owner or operator has elected to comply with the requirements of this section.

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Regional Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with § 264.1057(d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves subject to the requirements in § 264.1057 within the hazardous waste management unit shall be monitored within 1 week by the methods specified in § 264.1063(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of valves subject to the requirements in § 264.1057 for which leaks are detected by the total number of valves subject to the requirements in § 264.1057 within the hazardous waste management unit.

(d) If an owner or operator decides to comply with this section no longer, the owner or operator must notify the Regional Administrator in writing that the work practice standard described in § 264.1057(a) through (e) will be followed.

§ 264.1062 Alternative standards for valves in gas/vapor service or in light liquid service: skip period leak detection and repair.

(a)(1) An owner or operator subject to the requirements of § 264.1057 may elect for all valves within a hazardous waste management unit to comply with one of the alternative work practices specified in paragraphs (b) (2) and (3) of this section.

(2) An owner or operator must notify the Regional Administrator before implementing one of the alternative work practices.

(b)(1) An owner or operator shall comply with the requirements for valves, as described in § 264.1057, except as described in paragraphs (b)(2) and (b)(3) of this section.

(2) After two consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip one of the quarterly leak detection periods (i.e., monitor for leaks once every six months) for the valves subject to the requirements in § 264.1057 of this subpart.

(3) After five consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip three of the quarterly leak detection periods (i.e., monitor for leaks once every year) for the valves subject to the requirements in § 264.1057 of this subpart.

(4) If the percentage of valves leaking is greater than 2 percent, the owner or operator shall monitor monthly in compliance with the requirements in § 264.1057, but may again elect to use this section after meeting the requirements of § 264.1057(c)(1).

[55 FR 25501, June 21, 1990, as amended at 62 FR 64658, Dec. 8, 1997]

§ 264.1063 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.

(b) Leak detection monitoring, as required in §§ 264.1052–264.1062, shall comply with the following requirements:

(1) Monitoring shall comply with Reference Method 21 in 40 CFR part 60.

(2) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air).

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(c) When equipment is tested for compliance with no detectable emissions, as required in §§ 264.1052(e), 264.1053(i), 264.1054, and 264.1057(f), the test shall comply with the following requirements:

(1) The requirements of paragraphs (b)(1) through (4) of this section shall apply.

(2) The background level shall be determined as set forth in Reference Method 21.

(3) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(4) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(d) In accordance with the waste analysis plan required by § 264.13(b), an owner or operator of a facility must determine, for each piece of equipment, whether the equipment contains or contacts a hazardous waste with organic concentration that equals or exceeds 10 percent by weight using the following:

(1) Methods described in ASTM Methods D 2267–88, E 169–87, E 168–88, E 260–85 (incorporated by reference under § 260.11);

(2) Method 9060 or 8260 of SW–846 (incorporated by reference under § 260.11); or

(3) Application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced. Documentation of a waste determination by knowledge is required. Examples of documentation that shall be used to support a determination under this provision include production process information documenting that no organic compounds are used, information that the waste is generated by a process that is identical to a process at the same or another facility that has previously been demonstrated by direct measurement to have a total organic content less than 10 percent, or prior speciation analysis results on the same waste stream where it can also be documented that no process changes have occurred since that analysis that could affect the waste total organic concentration.

(e) If an owner or operator determines that a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the determination can be revised only after following the procedures in paragraph (d)(1) or (d)(2) of this section.

(f) When an owner or operator and the Regional Administrator do not agree on whether a piece of equipment contains or contacts a hazardous waste with organic concentrations at least 10 percent by weight, the procedures in paragraph (d)(1) or (d)(2) of this section can be used to resolve the dispute.

(g) Samples used in determining the percent organic content shall be representative of the highest total organic content hazardous waste that is expected to be contained in or contact the equipment.

(h) To determine if pumps or valves are in light liquid service, the vapor pressures of constituents may be obtained from standard reference texts or may be determined by ASTM D–2879–86 (incorporated by reference under § 260.11).

(i) Performance tests to determine if a control device achieves 95 weight percent organic emission reduction shall comply with the procedures of § 264.1034(c)(1) through (c)(4).

[55 FR 25501, June 21, 1990, as amended at 62 FR 32462, June 13, 1997]

§ 264.1064 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one hazardous waste management unit subject to the provisions of this subpart may comply with the recordkeeping requirements for these hazardous waste management units in one recordkeeping system if the system identifies each record by each hazardous waste management unit.

(b) Owners and operators must record the following information in the facility operating record:

(1) For each piece of equipment to which subpart BB of part 264 applies:

(i) Equipment identification number and hazardous waste management unit identification.

(ii) Approximate locations within the facility (e.g., identify the hazardous waste management unit on a facility plot plan).

(iii) Type of equipment (e.g.. a pump or pipeline valve).

(iv) Percent-by-weight total organics in the hazardous waste stream at the equipment.

(v) Hazardous waste state at the equipment (e.g., gas/vapor or liquid).

(vi) Method of compliance with the standard (e.g., ''monthly leak detection and repair'' or ''equipped with dual mechanical seals'').

(2) For facilities that comply with the provisions of § 264.1033(a)(2), an implementation schedule as specified in § 264.1033(a)(2).

(3) Where an owner or operator chooses to use test data to demonstrate the organic removal efficiency or total organic compound concentration achieved by the control device, a performance test plan as specified in § 264.1035(b)(3).

(4) Documentation of compliance with § 264.1060, including the detailed design documentation or performance test results specified in § 264.1035(b)(4).

(c) When each leak is detected as specified in §§ 264.1052, 264.1053, 264.1057, and 264.1058, the following requirements apply:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, the date evidence of a potential leak was found in accordance with § 264.1058(a), and the date the leak was detected, shall be attached to the leaking equipment.

(2) The identification on equipment, except on a valve, may be removed after it has been repaired.

(3) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in §§ 264.1057(c) and no leak has been detected during those 2 months.

(d) When each leak is detected as specified in §§ 264.1052, 264.1053, 264.1057, and 264.1058, the following information shall be recorded in an inspection log and shall be kept in the facility operating record:

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date evidence of a potential leak was found in accordance with § 264.1058(a).

(3) The date the leak was detected and the dates of each attempt to repair the leak.

(4) Repair methods applied in each attempt to repair the leak.

(5) ''Above 10,000'' if the maximum instrument reading measured by the methods specified in § 264.1063(b) after each repair attempt is equal to or greater than 10,000 ppm.

(6) ''Repair delayed'' and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(7) Documentation supporting the delay of repair of a valve in compliance with § 264.1059(c).

(8) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a hazardous waste management unit shutdown.

(9) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

(10) The date of successful repair of the leak.

(e) Design documentation and monitoring, operating, and inspection information for each closed-vent system and control device required to comply with the provisions of § 264.1060 shall be recorded and kept up-to-date in the facility operating record as specified in § 264.1035(c). Design documentation is specified in § 264.1035 (c)(1) and (c)(2) and monitoring, operating, and inspection information in § 264.1035 (c)(3)–(c)(8).

(f) For a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system, the Regional Administrator will specify the appropriate recordkeeping requirements.

(g) The following information pertaining to all equipment subject to the requirements in §§ 264.1052 through 264.1060 shall be recorded in a log that is kept in the facility operating record:

(1) A list of identification numbers for equipment (except welded fittings) subject to the requirements of this subpart.

(2)(i) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of §§ 264.1052(e), 264.1053(i), and 264.1057(f).

(ii) The designation of this equipment as subject to the requirements of §§ 264.1052(e), 264.1053(i), or 264.1057(f) shall be signed by the owner or operator.

(3) A list of equipment identification numbers for pressure relief devices required to comply with § 264.1054(a).

(4)(i) The dates of each compliance test required in §§ 264.1052(e), 264.1053(i), 264.1054, and 264.1057(f).

(ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(6) Identification, either by list or location (area or group) of equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year.

(h) The following information pertaining to all valves subject to the requirements of § 264.1057 (g) and (h) shall be recorded in a log that is kept in the facility operating record:

(1) A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

(2) A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.

(i) The following information shall be recorded in the facility operating record for valves complying with § 264.1062:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

(j) The following information shall be recorded in a log that is kept in the facility operating record:

(1) Criteria required in § 264.1052(d)(5)(ii) and § 264.1053(e)(2) and an explanation of the design criteria.

(2) Any changes to these criteria and the reasons for the changes.

(k) The following information shall be recorded in a log that is kept in the facility operating record for use in determining exemptions as provided in the applicability section of this subpart and other specific subparts:

(1) An analysis determining the design capacity of the hazardous waste management unit.

(2) A statement listing the hazardous waste influent to and effluent from each hazardous waste management unit subject to the requirements in §§ 264.1052 through 264.1060 and an analysis determining whether these hazardous wastes are heavy liquids.

(3) An up-to-date analysis and the supporting information and data used to determine whether or not equipment is subject to the requirements in §§ 264.1052 through 264.1060. The record shall include supporting documentation as required by § 264.1063(d)(3) when application of the knowledge of the nature of the hazardous waste stream or the process by which it was produced is used. If the owner or operator takes any action (e.g., changing the process that produced the waste) that could result in an increase in the total organic content of the waste contained in or contacted by equipment determined not to be subject to the requirements in §§ 264.1052 through 264.1060, then a new determination is required.

(l) Records of the equipment leak information required by paragraph (d) of this section and the operating information required by paragraph (e) of this section need be kept only 3 years.

(m) The owner or operator of a facility with equipment that is subject to this subpart and to regulations at 40 CFR part 60, part 61, or part 63 may elect to determine compliance with this subpart either by documentation pursuant to § 264.1064 of this subpart, or by documentation of compliance with the regulations at 40 CFR part 60, part 61, or part 63 pursuant to the relevant provisions of the regulations at 40 part 60, part 61, or part 63. The documentation of compliance under regulations at 40 CFR part 60, part 61, or part 63 shall be kept with or made readily available with the facility operating record.

[55 FR 25501, June 21, 1990, as amended at 61 FR 59952, Nov. 25, 1996; 62 FR 64658, Dec. 8, 1997]

§ 264.1065 Reporting requirements.

(a) A semiannual report shall be submitted by owners and operators subject to the requirements of this subpart to the Regional Administrator by dates specified by the Regional Administrator. The report shall include the following information:

(1) The Environmental Protection Agency identification number, name, and address of the facility.

(2) For each month during the semiannual reporting period:

(i) The equipment identification number of each valve for which a leak was not repaired as required in § 264.1057(d).

(ii) The equipment identification number of each pump for which a leak was not repaired as required in § 264.1052 (c) and (d)(6).

(iii) The equipment identification number of each compressor for which a leak was not repaired as required in § 264.1053(g).

(3) Dates of hazardous waste management unit shutdowns that occurred within the semiannual reporting period.

(4) For each month during the semiannual reporting period, dates when the control device installed as required by § 264.1052, 264.1053, 264.1054, or 264.1055 exceeded or operated outside of the design specifications as defined in § 264.1064(e) and as indicated by the control device monitoring required by § 264.1060 and was not corrected within 24 hours, the duration and cause of each exceedance, and any corrective measures taken.

(b) If, during the semiannual reporting period, leaks from valves, pumps, and compressors are repaired as required in §§ 264.1057 (d), 264.1052 (c) and (d)(6), and 264.1053 (g), respectively, and the control device does not exceed or operate outside of the design specifications as defined in § 264.1064(e) for more than 24 hours, a report to the Regional Administrator is not required.

§§ 264.1066—264.1079 [Reserved]